

# Flow

THE UNIVERSITY  
OF TEXAS

AUG 7, 1946

NEWSPAPER

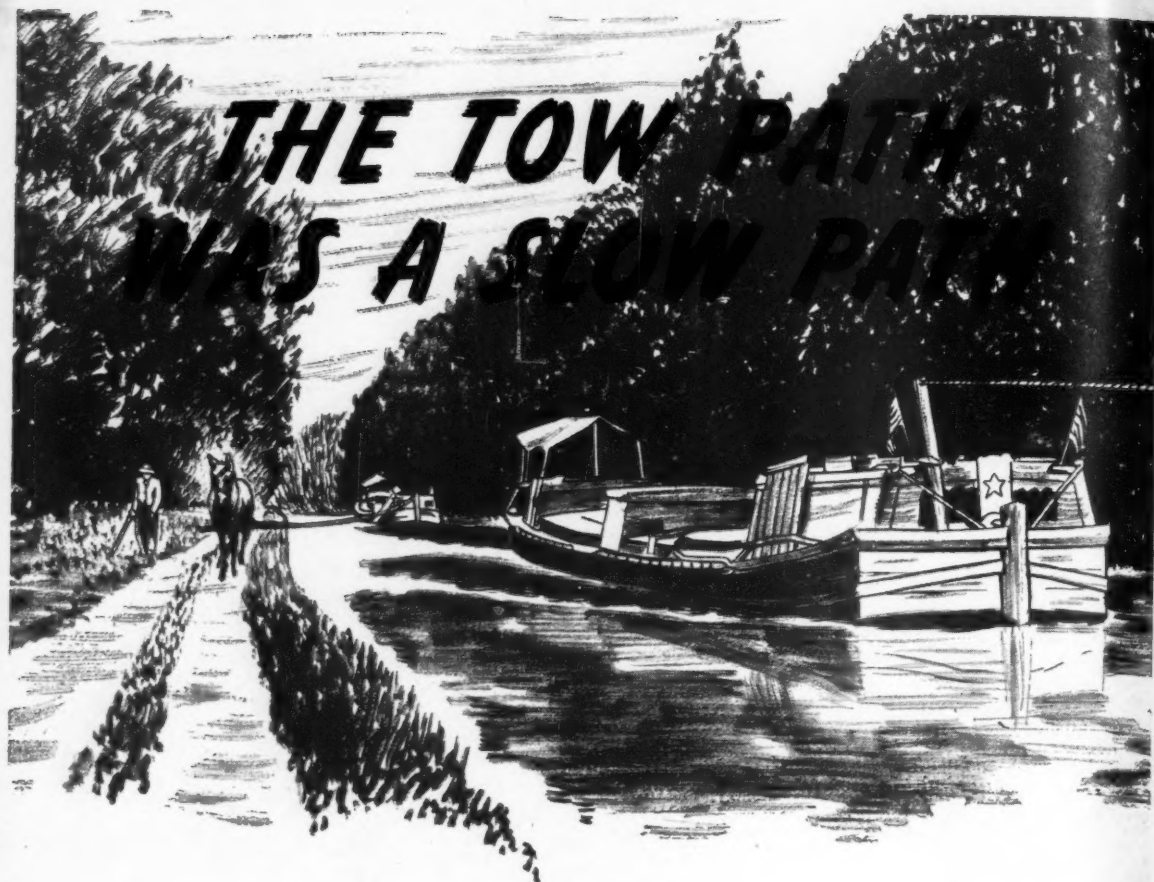
THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION

AUGUST  
1946



IN THIS ISSUE:

Hoisting Production 25%... Handling "Treet"... Building for Future  
Modern Foundry Handling... It's Magic... Wire Rope - Big Enough?



# THE TOW PATH WAS A SLOW PACE

Just as the animal-power canal barge gave way to the super steam-powered carrier, so man power for industrial lifting and hauling is giving way to the Truck-Man.

The Truck-Man is gasoline powered—two speeds—dead man brake. Steers easily in crowded aisles and through narrow doorways with skidded loads up to 2000 lbs. Hydraulic lift permits raising and lowering of load with a gentle, cushioned action.

*Write for descriptive bulletin*

Limited Open Territory for  
Substantial Distributors

# truck-man

a product of

**YARD-MAN, INC.**

1418 West Ganson, Jackson, Mich.

**\$675<sup>00</sup>**  
F. O. B.  
Jackson, Michigan



Auto

141 W  
Please  
TRAN  
( ) H

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# Now! LIFT, MOVE, STACK Materials Electrically with NEW TRANSTACKER

Low price brings modern material handling methods within reach of all!

**N**OW for the first time every business—every industry can use modern, money-saving material handling methods at new low cost.

Because in the new Transtacker, Automatic's engineers have developed a high-lift stacker that sells for as low as \$1800. And while it will move, lift and stack up to 4000 pounds, it weighs only 1900 pounds. This means you can safely use Transtacker, even if your floor and elevator capacities are limited.

With all the advantages of the famed Transporter that moves any kind of material with amazing "touch-of-your-thumb" ease, Transtacker now gives you an electric hydraulic lift that stacks your product at new heights to increase storage capacity. With finger-tip control it lifts up to 4000 pound loads in a matter of seconds... smooth, controlled lowering speed for utmost safety. Mail coupon for facts.

**OPEN FACE PALLET TYPE TRANSTACKER**  
—Capacity 3000 pounds—With suitable forks for stacking open face pallet loads.

**SUSPENDED LOAD TYPE PALLET TRANSTACKER**—Capacity 2500 pounds—With suitable forks for stacking double or open face pallets.

**STRADDLE TYPE PALLET TRANSTACKER**—Capacity 4000 pounds—With suitable forks for stacking double face or open face pallet loads.

PRICED AT ONLY

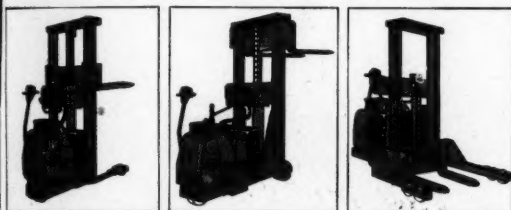
**\$1800**

(Some Models Slightly Higher)

## PLATFORM TYPE TRANSTACKER

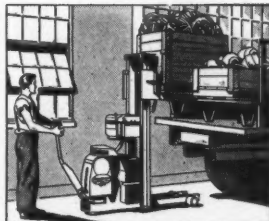
Capacity 4000 pounds

For stacking unit loads on skid platforms.



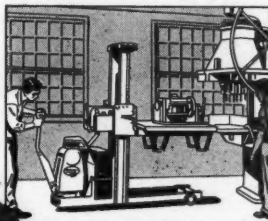
### FINGER TIP CONTROLS LOAD

Cartons, crated goods, hard-to-handle material—one man or girl hauls, lifts and stacks to full storage heights.



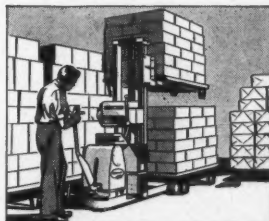
### ENORMOUS SAVINGS IN SHIPPING

Pick up merchandise from ground level and deposit it on truck or trailer. A three-man operation becomes a one-man operation.



### LIFTS HEAVY MACHINE PARTS

When heavy machine parts must be lifted to working height, let Transtacker safely lift it and place it.



### ENDS BACK-BREAKING HANDLING

This can be your trucker—easily, efficiently stacking your material with Transtacker. Extra storage space is yours free.

## PRE-TESTED IN INDUSTRY

- 1 Cuts loading and unloading time in half.
- 2 One man does the work of three with less effort—Transtacker cuts handling costs up to 60%.
- 3 Light in weight for limited floor and elevator load capacity.
- 4 Hauls any kind of product with "touch-of-thumb" ease.
- 5 Gives you extra storage space without added cost.
- 6 Lifts and stacks product from ground level to trucks and trailers.

LOOK TO THE LEADER  
FOR ALL THAT'S NEW!

Transtacker

Lightens  
LIFE'S LOADS

## AUTOMATIC TRANSPORTATION COMPANY

DIV. OF THE YALE & TOWNE MFG. CO.

141 West 87th St., Dept M Chicago 20, Illinois

Please mail me without cost or obligation, complete facts about the NEW TRANSTACKER.

( ) Have an A.T.C. Specialist call and survey my material handling costs.

Company Name.....

By.....Position.....

Street Address.....

City.....State.....

AUGUST, 1946





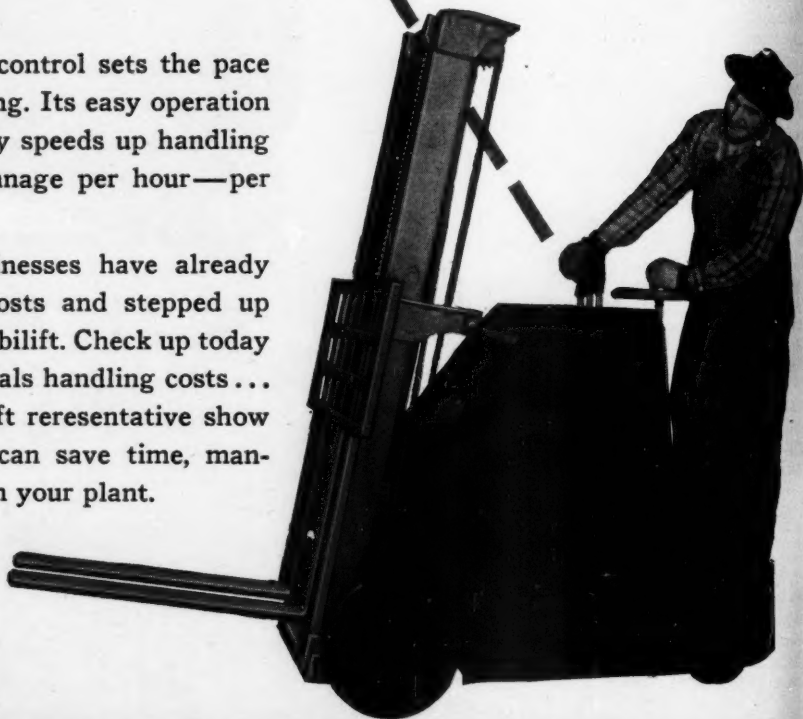
# MOBILIFT

*Gives You*

## FINGER-TIP CONTROL

Mobilift finger-tip control sets the pace in materials handling. Its easy operation and maneuverability speeds up handling ... moves more tonnage per hour—per day—per year.

Thousands of businesses have already cut warehousing costs and stepped up production with Mobilift. Check up today on your own materials handling costs ... then have a Mobilift representative show you how Mobilift can save time, manpower and money in your plant.



Sales Offices: 34-48 Steinway St., Long Island City, N. Y. 2430 So. Parkway, Chicago 16, Ill. 107 Walton St., N. W. Atlanta, Ga.

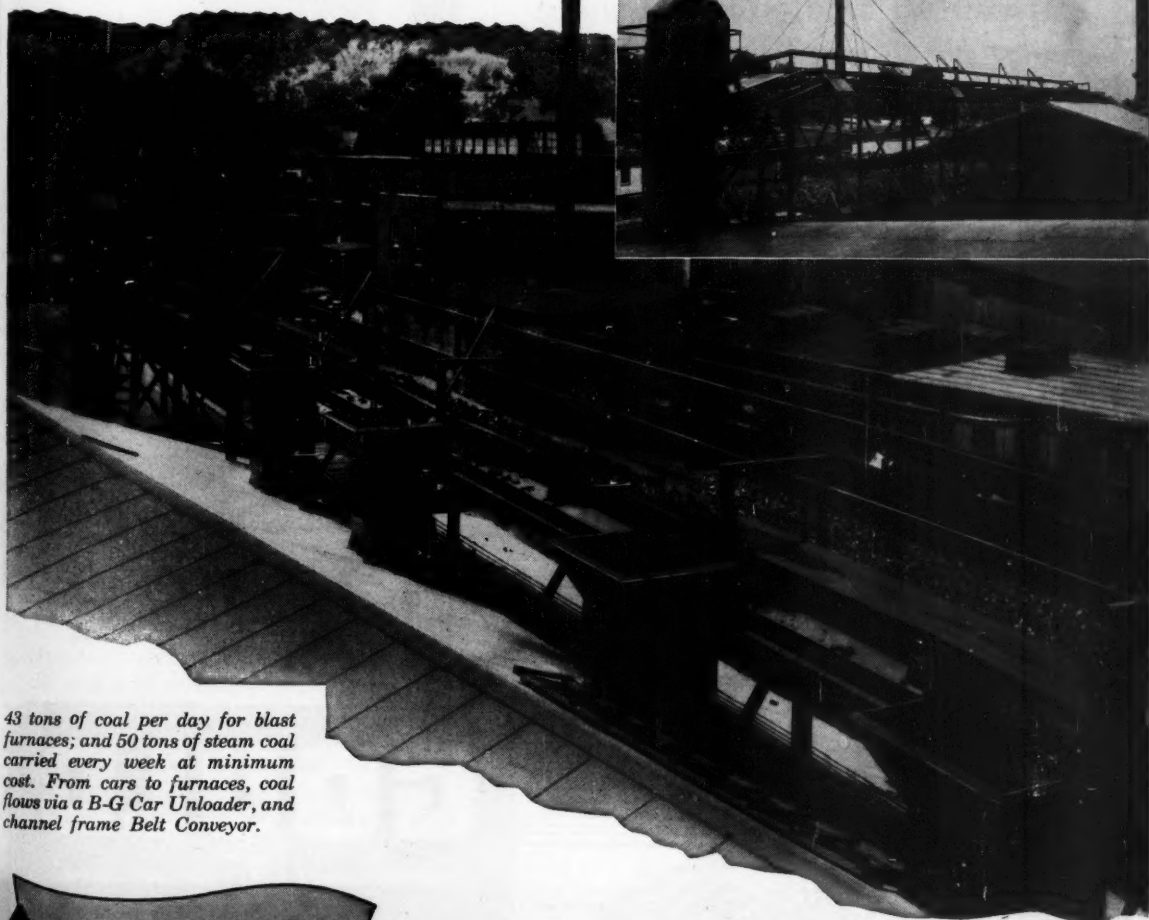


# Costs Fall when Coal Flows on Belt Conveyors . . .

There's many a plant like this one where B-G Belt Conveyors are reducing handling costs—by maintaining a smooth, constant flow of coal, minimizing rehandling and demanding little in the way of maintenance.

These conveyors have much to recommend them. Made of simple standardized units, they're easily adapted to all belt conveyor jobs—far easier to install than complicated "special engineered" conveyors—and usually more quickly delivered. A discussion with your Barber-Greene representative will be well worth your while.

Barber-Greene Company, Aurora, Illinois.



43 tons of coal per day for blast furnaces; and 50 tons of steam coal carried every week at minimum cost. From cars to furnaces, coal flows via a B-G Car Unloader, and channel frame Belt Conveyor.



CONSTANT FLOW EQUIPMENT

AUGUST, 1946

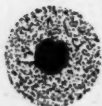


# POWER *for* SUSTAINED EFFORT

## Gould Kathanode Batteries will speed electric truck operations for their entire service life

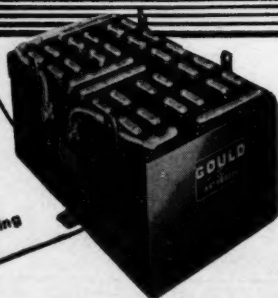
Like trained wrestlers, Kathanode batteries have endurance. They deliver 100% or more of rated capacity throughout their service life.

### Here's the reason why —

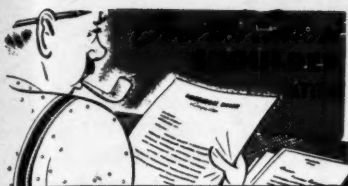


The extra large positive plates of the Kathanode Battery are packed with Black Oxide active material. Made in the Gould plant by an exclusive Gould process, this active material contains particles of pure lead, which, through normal cell action, replace spent active material as needed. Thus the power producing capacity of the battery is maintained.

Black Oxide is but one of Kathanode's special features. Get the facts. Write Dept. 78 for Catalog 100 on Gould Kathanode Batteries for Industrial Truck and Tractor Service.



GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.  
Service Centers: Atlanta • Boston • Buffalo • Chicago • Cincinnati  
Cleveland • Detroit • Kansas City • Los Angeles • New York  
Philadelphia • Pittsburgh • Portland • St. Louis • St. Paul • San Francisco



#### To FLOW:

##### *Making Similar Installations*

The May issue of FLOW includes an article on page 17 by Mr. A. Douglas Murphy (of Standard Oil of New Jersey) covering "Handling and Merchandising."

It has been our pleasure to be acquainted with Mr. Murphy for quite some time. In fact, he has personally escorted us on a visit to inspect the installations described in this issue of FLOW, and we are at present engaged in the practice of making similar installations throughout the country.

We will accordingly appreciate your sending us about one dozen copies, reprints or tear-sheets, in order that we may distribute them to the various (of our) plants which have similar problems.

We have been readers of FLOW since its first issue, and find it very informative.—R. H. Lahey, American Cyanamid Co., New York City.

The Standard Oil Company has been among the first concerns in its field to adopt modern mechanized methods for handling drums.

#### To FLOW:

##### *Drawings Requested*

We would appreciate very much obtaining specifications and drawings of the hand lift truck, shown on page 30 (of the April issue), in connection with the article on the unit load system at the Singer Manufacturing Co.

Thank you for your assistance in procuring this information.—A. E. McElroy, Plant and Facilities, General Motors Overseas Corporation, New York City.

We have referred Reader McElroy's request to the individual concerned at The Singer Manufacturing Co., a recognized pioneer in modern material handling.—Ed.

#### To FLOW:

##### *Steel Tubing*

Sometime during the latter part of 1945 your publication carried

# WHEN YOU **PLAN** YOUR NEXT INDUSTRIAL HAULING EQUIPMENT...

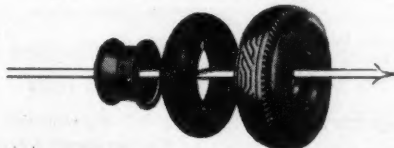
## Remember...

**GENERAL INDUSTRIAL PNEUMATICS**  
cut material handling costs five ways —



- 1 Generals move material faster...** efficiency saves labor, speeds production.
- 2 Generals move loads easier,** over rough, smooth or soft surfaces... *stop spillage, breakage.*
- 3 Generals cushion load and truck...** avoid equipment breakdowns due to jarring and jolting.
- 4 Generals end excessive floor wear...** do not cut asphalt, linoleum — cannot cut or chip.
- 5 Generals reduce maintenance...** handtrucks and cargo wagons stay in service.

FACTORY ASSEMBLED



WHEEL • TUBE • TIRE



Dept. 7  
**THE GENERAL TIRE & RUBBER CO.**  
AKRON, OHIO

INDUSTRIAL PNEUMATIC TIRE • TUBE • WHEEL UNITS

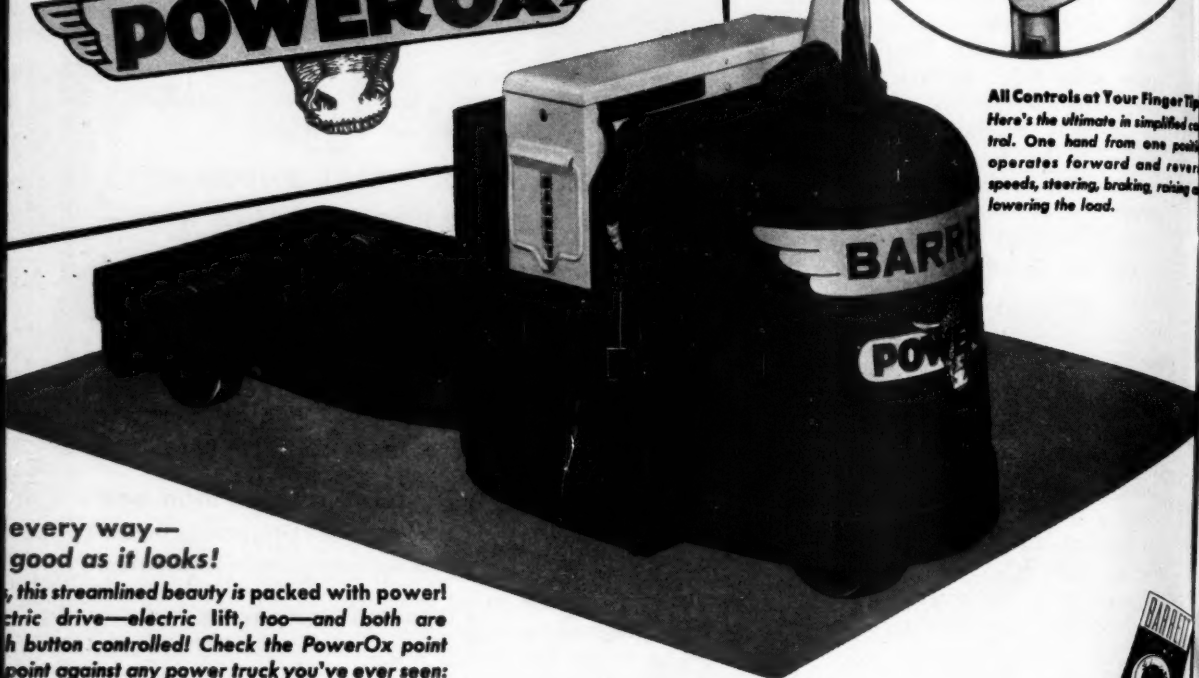
epew, N.Y.  
o • Cincinnati  
• New York  
San Francisco

FLOW

AUGUST, 1946



# NOW...an improved BARRETT



**All Controls at Your Finger Tips**  
Here's the ultimate in simplified control. One hand from one position operates forward and reverse speeds, steering, braking, raising and lowering the load.

every way—  
good as it looks!

...this streamlined beauty is packed with power! Electric drive—electric lift, too—and both are push button controlled! Check the PowerOx point point against any power truck you've ever seen:

**TWO CAPACITIES** . . . 4000 or 6000 pounds.

**ELECTRIC TRAVEL** . . . Heavy duty motor . . . large diameter, wide face front wheel. PowerOx travels at steady walking speed whether empty or loaded—no speed-ups or lagging.

**ELECTRIC LIFT** . . . Full 4-inch lift in 4 seconds. Aircraft type hydraulic gear pump is in direct connection with drive motor.

**HIGH CLEARANCE** . . . Sturdy, deep-section frame will not snag on inclines, door sills, etc. The PowerOx is available in 6', 7', 9' and 11' height—all with a full 4-inch lift.

**STEERING** . . . Steer with full power through 270 degrees—greater than any other truck!

**BRAKING** . . . Brake with handle in horizontal or vertical position. Brakes are automatic, automotive type . . . respond instantly to a slight pressure on handle.

**CONTROL** . . . Control with your finger tips the two speeds forward, two reverse, also lifting and lowering—all with the handle in any position!

Full details on the improved PowerOx are yours for the asking. Drop a card to

**BARRETT-CRAVENS COMPANY**

3257 West 30th Street • Chicago 23, Illinois

Representatives in All Principal Cities

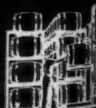
Canadian Licensee: S. A. Armstrong, Ltd. • Toronto, Canada

Send for the little book that saves big money—Free copy of the Barrett Catalog!



Barrett  
Handling  
Equipment

ONE MAN DOES MORE THAN 3 OR 4 . . . WITH A BARRETT



an article about a pipe mill in one of the large steel companies. We would appreciate receiving a copy of this issue.—Joseph C. Jones, Jones and Yoder, New York City.

The article appeared in the December 1945 issue. Title: "A Pipe Dream Come True." It covered the handling at Steel and Tubes, division of the Republic Steel Company.—Ed.

To FLOW:  
Glass Tubing

We are very anxious to obtain a copy of the March issue of FLOW.

Perhaps you could advise us as to the source of an item on the handling and packaging of glass tubing appearing in this issue, if a copy of it is not available.—J. B. Chestnut, Purchasing Agent, Corning Glass Works, Corning, N. Y.

Reader Chestnut's inquiry refers to the item appearing in the regular FLOW department "On The Pallet," page 40 of the March issue. Since several inquiries on this still reach us periodically, we are herewith giving the address of the organization which furnished the original information: Electric Manufacturers' Public Information Center, 155 East 44th St., New York 17, N. Y.—Ed.

To FLOW:  
"Extremely Useful"

We read with interest the article "Up . . . Up . . . and Away," which appeared in the December 1945 issue of FLOW.

We are renovating our raw material stockroom and we feel that the material handling methods described in this article are the solution to our problem. Therefore, if you have more detailed information available, particularly with regard to the construction of racks and slings and the method of racking tube and bar stock at higher levels, we would appreciate receiving it.

The articles in FLOW are exceptionally interesting and well edited and we have found them extremely useful.—C. R. Phillips, Factory Planning Engineer, Telephone Division, Northern Electric Co., Montreal.

# ROUSTABOUT CRANE

brings indoor-factory efficiency and lower costs to your factory yard

You've got a crane, a magnet or a grab-bucket anywhere you want it around your yard exactly when you want it—when you have a Roustabout. Fast and powerful, this mobile load-hustler gives you low cost materials handling outdoors all around your plant to match your indoor efficiency. It keeps 101 things organized, on the move, prevents costly delays—no waiting for crews from other jobs. Built for years of overwork—ball-bearing boom turntable, all gears in oil. Capacities to 7½ tons—it's the answer to your yard problem. Write for complete facts, now!

**THE HUGHES-KEENAN COMPANY**  
648 NEWMAN STREET • MANSFIELD, OHIO



**Roustabout Cranes**  
By Hughes-Keenan



● Fast efficient handling of all kinds of loads . . . with hook.



● With grab-bucket . . . Roustabout hustles sand, cinders, etc.

# 10 AT A TIME!

with these R & M Hoists...



Type 5 1/2 R & M hoist with standard outrig control arm. Hoists at Ferro have special extension to clear wide tanks. Capacity: 1000 pounds. Headroom with standard hook: 21 inches.

## Speedy, Low-Cost Production with the RIGHT EQUIPMENT

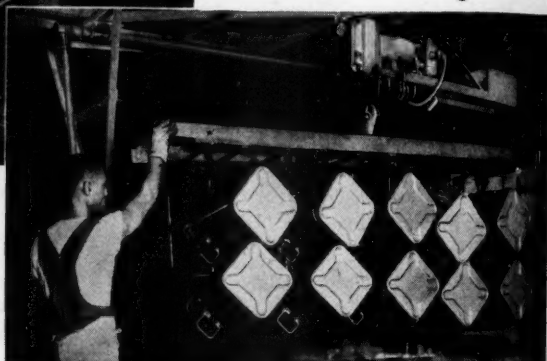
What the Ferro Stamping & Mfg. Co., Detroit, did in their galvanizing of Navy ammunition cases proves again that the *right* hoist saves minutes, muscle, money—gets jobs done quickly, and well.

Ferro's problem, as *yours* may be, was how to eliminate rehandling. Their answer was *group movement* with R & M electric hoists.

### NOTHING TO GET IN THE WAY

Racks for ten cases were designed to span the series of tanks. Above these tanks were installed two trolley-mounted R & M hoists with outrig extensions for convenient control without *reaching*. That Ferro now proposes to use this same equipment on postwar items is praise enough for *performance*.

Selection of hoists is always a job for specialists—and *building* them is, too. So why not ask us to survey *your* situation? Good hoists multiply manpower; pay for themselves *quickly*.



(Left, above) In sequence from far and these tanks contain: hot alkali cleaner; water for rinsing; sulphuric acid pickle; rinse water; and No. 20 flux. Rack of cases in foreground is draining excess flux while protective film forms. (Above) Operator transfers loaded rack to next stage of treatment. Standing on a walkway, he manipulates lifting and lowering by a twist of the wrist; moves rack from tank to tank by pushing against control arm. Production: 50,000 cases and covers per month.

## Sent Free — JUST CHECK, MAIL

HELPFUL, INFORMATIVE BULLETIN YOU SHOULD HAVE

- ☐ No. 7171-A. 500-1000-lb.-capacity hoists, pendant-rope controlled.
- ☐ No. 880-A. 1000-2000-lb.-capacity hoists, push-button controlled.
- ☐ No. 801. 1000-15,000-lb.-capacity hoists, push-button controlled.

Name .....

Company .....

Address .....



City ..... Zone ..... State .....

**ROBBINS & MYERS • INC.**

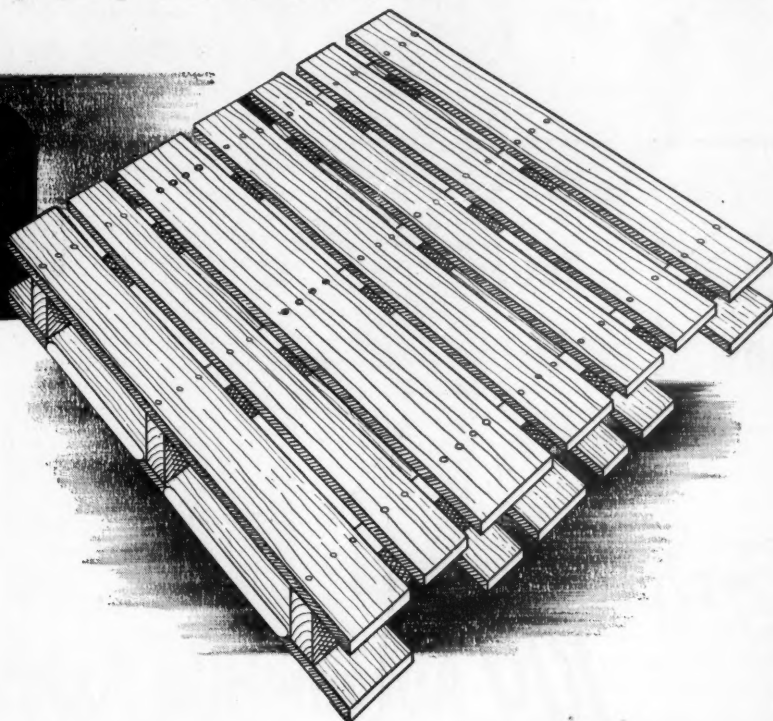
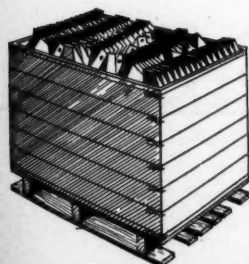
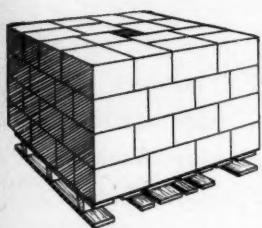
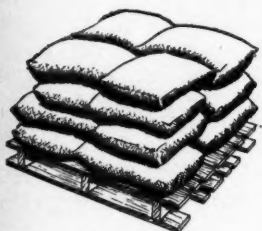
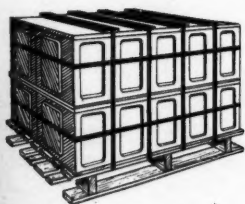
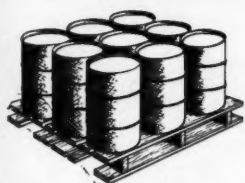
HOIST & CRANE DIVISION • SPRINGFIELD, OHIO  
In Canada: Robbins & Myers Co., or Canada, Ltd., Bramford, Ont.

MOTORS • HOISTS • CRANES • MACHINE DRIVES • FANS • MOYNO PUMPS • FOUNDED 1878



THIS  OR THIS 

"GENERALIFT" PALLETS  
FOR THE QUICKER AND  
EASIER HANDLING OF  
HUNDREDS OF PRODUCTS



# Generalift Pallets

**SAVE 50% TO 90%**

The U. S. Navy reports many examples of savings of 50% to 90% in materials handling through the use of pallets and fork lift trucks. In some cases, even greater savings resulted. Instead of picking it up and laying it down—moving it piece by piece—many items can be consolidated into single loads—palletized—moved as one.

Result: one workman and fork lift truck do the work of many . . . reduce handling costs, save time and packaging materials . . . pro-

tect shipments from costly damage in transit . . . simplify warehousing and taking of inventory (count pallets instead of each item).

Hundreds of products can be shipped easier, handled easier, and stored easier with Generalift Pallets. Write today. Let us tell you more about this modern, economical method of materials handling.

Generalift Pallets, Skids, and Lift Boxes are made of sturdy hardwood construction. Designed for long life, rough handling, extra heavy loads! Generalifts are made to meet your specific requirements.

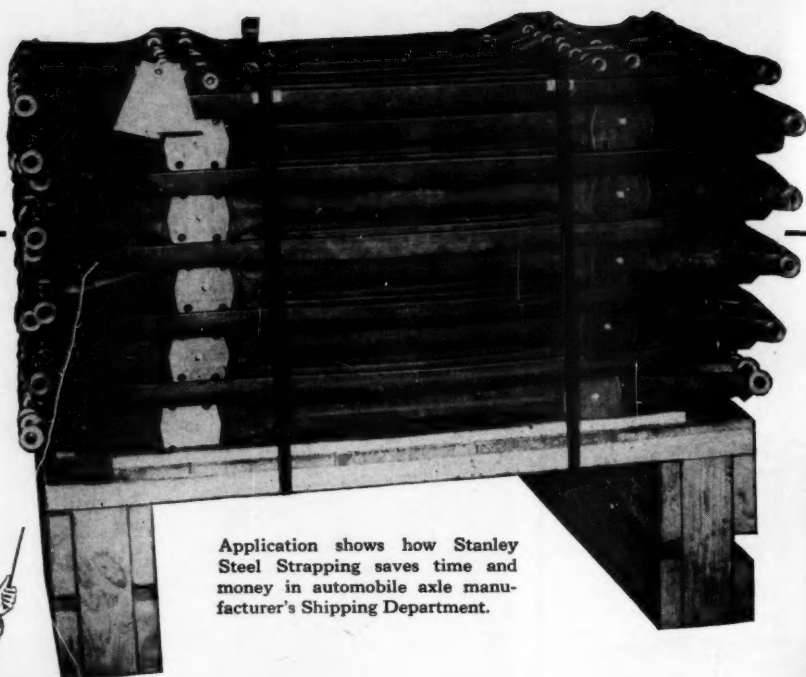
**ALL TYPES OF  
ENGINEERED SHIPPING CONTAINERS**

## GENERAL BOX COMPANY

**GENERAL OFFICES:** 60 West Illinois St., Chicago 10, Illinois  
**DISTRICT OFFICES AND PLANTS:** Brooklyn, Cincinnati, Detroit,  
East St. Louis, Kansas City, Louisville, Milwaukee,  
New Orleans, Sheboygan, Winchendon.  
Continental Box Company, Inc.: Houston, Dallas.



**ECONOMIZE . . . PALLETIZE . . . GENERALIZE!**  
AUGUST, 1946



Application shows how Stanley Steel Strapping saves time and money in automobile axle manufacturer's Shipping Department.

# **100 Automobile Axles Become 1 Easy-to-Ship "Package"**

## **with STANLEY STEEL STRAPPING**

Whatever the size or shape of your products you can ship them quickly, easily, *safely* with Stanley Steel Strapping.

Stanley Steel Strapping methods give strength without bulk to any crate, reel, bale, case or carton — band awkward-to-handle pieces into compact, easily-loaded units.

To save time in your Shipping Department — to give your shipments full protection against hard knocks in transit, use Stanley Steel Strapping. Tools, reels and all accessories for every type of package application are available. The Stanley Works, Steel Strapping Division, New Britain, Connecticut.

# **STANLEY**

Trade Mark

## **STEEL STRAPPING AND CAR BANDING SYSTEMS**

# BATTERY TRUCKS need less attention

## ...ALKALINE BATTERIES



### give most trouble-free power



Tiering of materials to the ceiling permits maximum utilization of storage space. This is a stop-and-go handling job in which battery trucks excel because of their inherent flexibility and dependable operation.

**Edison**  
ALKALINE BATTERIES

THE performance of American industry during the war furnished convincing evidence of the superior dependability and high availability of battery-powered material handling trucks. They stayed on the job 24 hours a day — day in and day out — with an amazing regularity that many users thought was impossible until they saw it demonstrated. Here's why:

The electric drives in a battery truck are inherently simple, have few moving parts to require repair and replacement, and are free from wear-and-tear vibration. Exchange batteries keep the truck continuously supplied with power, so except for a few minutes to change batteries two or three times per 24-hour period, the truck need not stop working for servicing of its power unit.

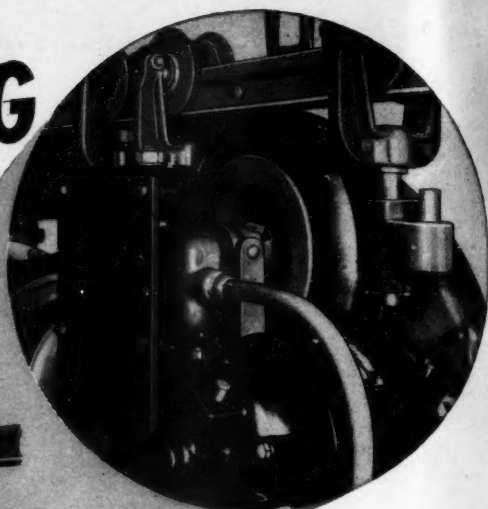
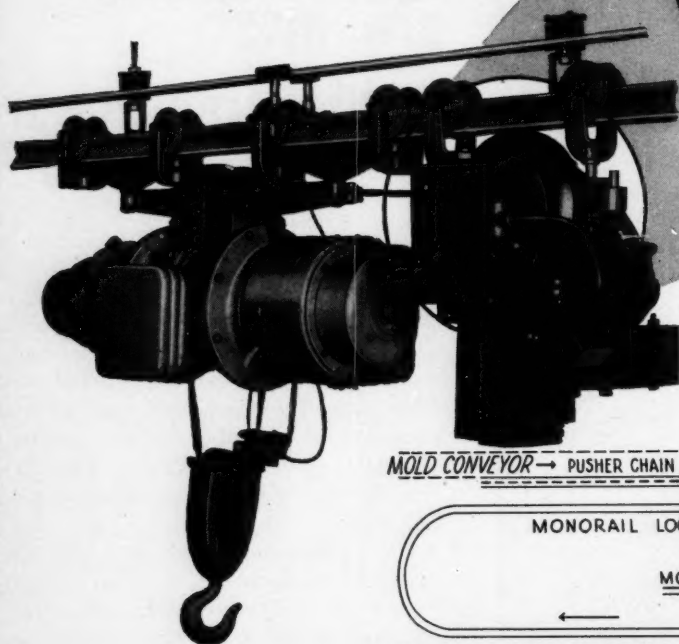
Besides requiring less attention, the battery truck is also economical to operate. It uses power most efficiently because it starts instantly, accelerates rapidly, and consumes no power during stops. The current used for charging its battery is the lowest-cost power available.

Because of these inherent advantages, the battery truck is therefore a most dependable and efficient material handling unit . . . especially when powered by Edison Alkaline Batteries. With steel cell construction, a solution that is a preservative of steel, and a fool-proof electrochemical principle of operation, they are the longest-lived, most durable and most trouble-free of all industrial truck batteries. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. In Canada: International Equipment Co. Ltd., Montreal and Toronto.

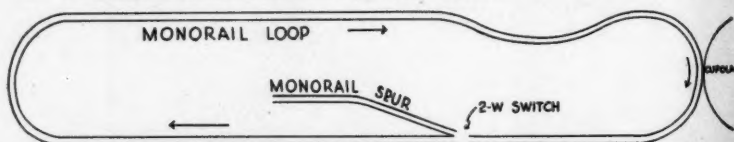


# FASTER POURING

with "Free-Wheeling"  
AMERICAN MONOTRACTOR



MOLD CONVEYOR → PUSHER CHAIN SYNCHRONIZED WITH FLOOR CONVEYOR



LAYOUT OF POURING LOOP FOR CYLINDER HEAD LINE

Here is another example of American MonoRail engineering with the American MonoTractor.

A rubber drive wheel propels a heavy bull ladle from the cupola to floor conveyor carrying flasks. When the unit reaches the pouring area, clutch disengages the MonoTractor drive wheel so that carrier unit can be picked up by an overhead pusher and moved along over the flasks at

the same speed as the floor conveyor. This enables the operator to concentrate all efforts on pouring. No worry about "keeping up" or "getting behind" the flask—operator forgets about horizontal movement and is able to pour metal faster and more accurately.

This principle is applicable to many conveyor lines for process in motion. Let an American MonoRail Engineer go into further details.

THE AMERICAN

# MONORAIL

COMPANY

13129 ATHENS AVENUE • CLEVELAND 7, OHIO

# In the Old Battle for New Ways

## TO REDUCE PRODUCTION COSTS

...improved materials handling, because in the past so often neglected, probably holds greater possibilities than any other element of cost in modern production.

Production has aptly been called "materials in motion"—*in* machines and processing equipment, as well as *between* them and departments for finishing, packaging, storage and shipment.

This often calls for "Cleveland" shop con-

tainers and other steel equipment designed and built to fit individual needs, because the mass production of small products permits of no compromise with efficiency or fitness for their intended functions. "Cleveland" make stock as well as special sizes and models, specializing in designing and building to order to suit individual requirements.

**STEEL FACTORY EQUIPMENT DIVISION**  
CLEVELAND WIRE SPRING COMPANY

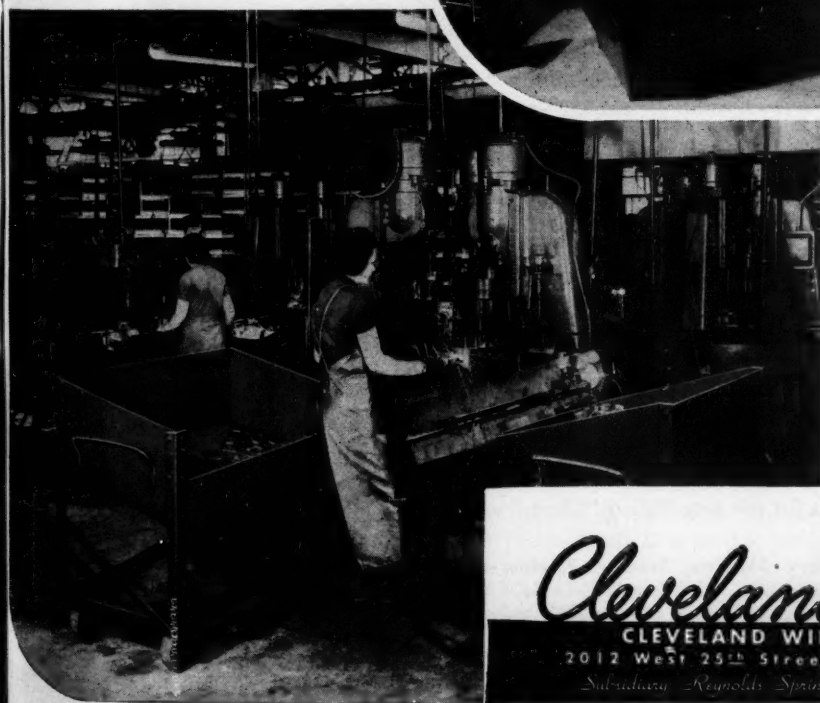
## ORIGINAL IDEAS!

Replacing boxes of more conventional type the Soss Mfg. Co., Detroit, uses a smaller number of relatively large capacity box trucks for most efficient handling of small products, (hinges) as here illustrated. Much time is saved by elimination of repeated pickups with separate truck and restacking. Where, as in this plant, successive operations are numerous, calling for frequent moves between machines or departments in close proximity, this idea has many advantages.



## ASK FOR CATALOG

of "Cleveland" steel shop boxes, barrels, stools, hand trucks, tool boxes and cabinets, racks, bins, etc. Contains many valuable suggestions.



*Cleveland*

**STEEL SHOP EQUIPMENT**

CLEVELAND WIRE SPRING CO.

2012 West 25th Street, Cleveland 13, Ohio

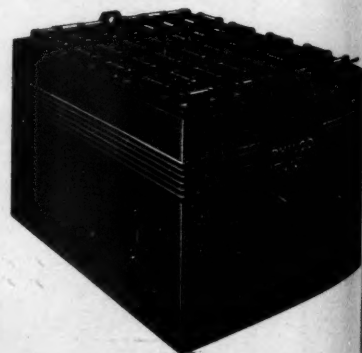
Subsidiary: Reynolds Spring Company, Jackson, Mich.



*It's the Dollars they Save that Counts!*

Now that wide experience with palletized unit loads has proved battery-powered electric trucks the most flexible, safe, cost-saving equipment for handling materials and finished goods—make this knowledge pay off! Go the whole way by powering your electric trucks with the amazing new Philco "Thirty", the high capacity battery that gives 30% longer life! It will save you money. Write for the new Philco "Thirty" catalog.

Philco Corporation, Storage Battery Division, Trenton 7, New Jersey



**PHILCO** FOR 50 YEARS A LEADER IN  
 INDUSTRIAL STORAGE BATTERY DEVELOPMENT



# Flow

The magazine which integrates material handling equipment into the flow of production.

Vol. 1, No. 11

AUGUST  
1946

## In this issue

HOISTING Production 25%—how hoists aid output in a gear plant...	16
HANDLING "TREE"—a story about Armour and Co.'s meat product...	20
NO PAUSE for Handling—in a Coca-Cola bottling plant.....	22
BUILDING for the Future—Up-to-date methods for building blocks...	27
Modern Foundry HANDLING—a National Malleable story.....	28
Is Your Wire Rope LARGE Enough?—a vital question answered.....	34
Handling Time REDUCED 75%—modern cargo methods.....	37
It's MAGIC!—how Magic Chef is modernizing its lines.....	49

Over Ed.'s Shoulder—letters.....	5	Opportunities—men and jobs wanted, lines available .....	40
On the Pallet—news, views, trends...	24	New Products—equipment of interest	41
Off the Shipping Platform.....	38	The FLOW Classroom—proper loading methods .....	44
New Literature—free material from manufacturers .....	40		

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SUBSCRIPTIONS—By the year, \$2.00; Two years, \$3.00; Single copy, 25 cents.

FOREIGN SUBSCRIPTIONS—Canada, \$3.00 per year, Two years, \$5.00; Foreign, \$4.00 per year, flat.

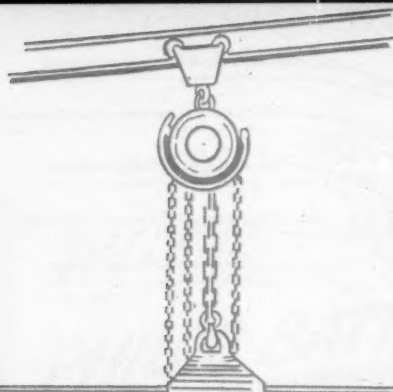
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COVER PHOTO—Part of the conveyor system that enables the Coca-Cola Bottling Co., Cincinnati, to distribute more than a quarter of a million bottles daily in the Cincinnati area. A deflecting arm across these two lines controls the travel of the cases. See the story starting on page 22.

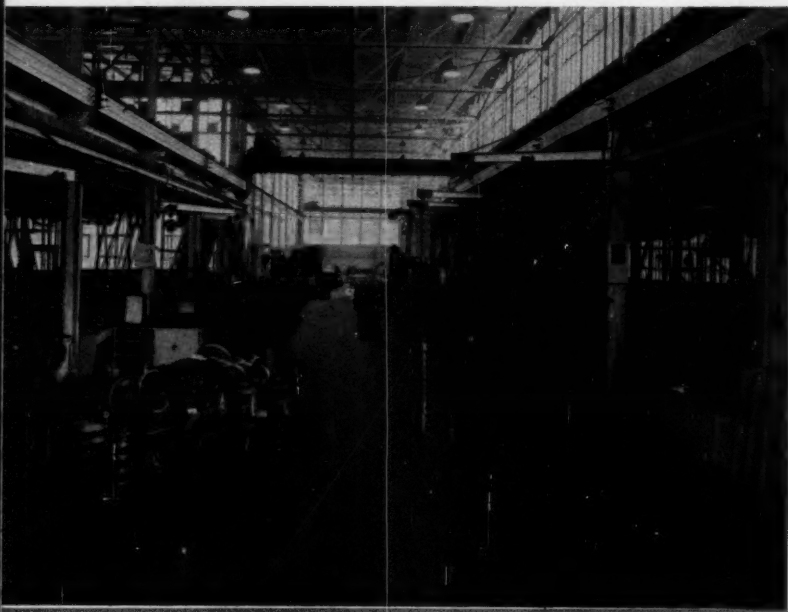
Features

Departments

*Hoists, in conjunction with cranes and on-the-floor equipment, speed the flow of work through exacting operations in this gear manufacturing plant. Payoff: a 25 per cent increase in production. From receiving through shipping, dozens of hoists perform a variety of lifting, positioning, transfer and loading tasks.*



# HOISTING PRODUCTION.



Center aisle: A jib hoist is installed between each two machines. Production was thus upped 25%, and cranes are left free for heavy lifts.

Serving production: Hoist places blank in turning machine. Use of belt sling avoids "walking of the blanks."



essed is made to customers' specifications; none is placed in stock.

The central idea of this article was summed up by President George F. Stahl in a remark he made to a FLOW editor, thus: "We tell our people we don't want them to do any heavy muscular work—and they don't have to. For that purpose we supply material handling devices at every work station where lifting, adjusting and similar tasks are performed!" The application of this principle has for years paid dividends in terms of higher output per manhour and lower production cost.

George Stahl is now in his seventies, and has spent most of his life in the machine shop business. His realization of the importance of material handling was not obtained through hearsay or casual inquiry; rather it grew naturally from his first-hand and intimate knowledge of efficient production methods. An operator who has to divert his efforts to handling functions is naturally going to fall behind in his output.

The over-all operation makes use of some 45 hoists—from one half to 2 ton capacity—which are installed throughout the plant. The heavier tasks are performed by two overhead traveling cranes; and portable elevators, skids, hand lift trucks, and a mobile floor crane provide the flexibility required in handling items whose diameters vary from an inch or two to six feet or more; and from a few pounds each to several tons.

**T**HIS is a story about a small plant that offers a BIG lesson in material handling.

The Stahl Gear and Machine Co., Cleveland, normally employs about 80 productive operators. It's a jobbing shop and the gears made are not standard. The products are manufactured and/or cut for Diesel engines, blast furnaces, coal mines, motors, rolling mills, and many other uses. Every item proc-

## Putting Things Where They Belong

The main manufacturing aisle, 250 feet long, is flanked on the east by one bay and on the west by two bays, all three of which are shorter than the center one. The combined width of the four bays is approximately 140 feet. The main bay is of one-floor con-

# 25%

struction, providing unlimited floor load capacity. A second-floor section, over the two west bays, is used for offices, a pattern shop, and a non-metallic department where bakelite, rawhide, and fabroil gears are machined. A smaller third-floor section is used for pattern storage.

A large part of the material for production—steel and cast iron castings and forgings as well as bar stock—arrives by truck at the south end of the center bay, the main receiving point. This entire bay is covered by a crane runway. A 5-ton floor-controlled crane operates on its front end, while the rear part of the area is served by a 3-ton crane which is also pendant-controlled. Immediately inside the 12 x 12-foot door is a 35-ton weighing scale with a platform measuring 24 x 18 feet. All incoming materials can thus be conveniently weighed, likewise the sizable amount of chips and turnings that leaves the plant at this point.

The heavy castings and forgings are removed from the trucks by the 5-ton crane. This material may be transported either to the stockpile at the rear of the plant or directly to the machining stations arranged on this aisle. Heavy bars, forged or rolled, are deposited at a side door in the rear. From here these heavy pieces (weighing about one ton each) are moved to an outside storage area by an electric hoist traveling on a monorail. Smaller-diameter bars are stored in a space within the building, adja-

cent to the metal cutting saws. Here the material moves forward in production.

While it would be more desirable to have all heavy material come in at the rear of the plant, the existing arrangement of handling facilities make the present method preferable.

With the plant located in a built up, high land value area, with buildings on either side, no additional space is available for a rearrangement of the layout. In view of this, the combined crane-and-hoist operation is overcoming a handicap by providing safe, efficient handling of heavy items within existing space limitations).

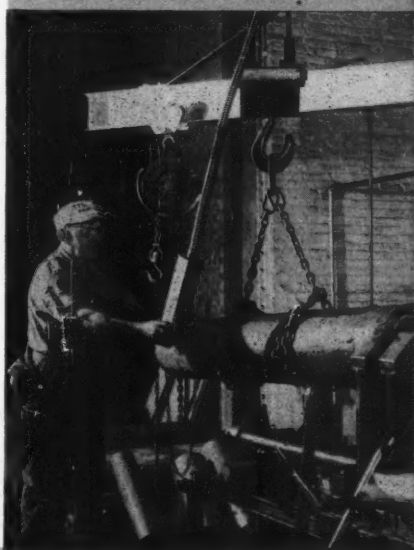
Since the 5-ton crane is also kept busy serving the numerous gear cutting machines installed to either side of the main aisle, other devices are provided for handling the medium-heavy and lighter material from the incoming trucks. For certain pieces a portable elevator is used. The platform is elevated to the height of the truck or trailer bed and the pieces are rolled out on it. The portable elevator is pushed directly to the proper machining or cutting station. Usually the longest move of this kind is within 50 feet.

The smallest and lightest individual pieces (usually they arrive machined ready for cutting), are stacked from the trucks on 36 x 42-inch wooden skids with steel legs, which are then moved short distances by hand lift truck to the nearby cutting machines. When short, small-diameter bar stock is handled, retainer strips nailed on the skids, or end walls, prevent the material from rolling off.

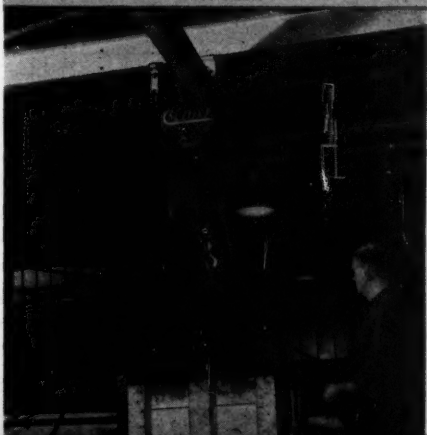
Moving raw material: Hoist moves 1-ton bar outside storage area inside the plant for sa



Bar is now suspended from crane, shown pl it in sawing machine. Jib hoist will adjust



Transfer between floors: Load of rawhide gear blanks is lowered from second to the first floor.



Portable elevator serves as conveyor receiving platform. It will move castings directly to assigned machi





To hold traffic through the main aisle to a minimum and prevent congestion at the main receiving point, a side door for receiving purposes is also provided at the rear of the east bay. An overhead monorail track extends into the alleyway, permitting the unloading of certain medium-heavy pieces from trucks by electric hoist. Material arriving at this point is usually deposited near machines located near this door, thus avoiding excess traffic.

One other receiving point (for heavy machinery and coal) may be mentioned in passing. This is at the rear of the central bay, which extends beyond the flanking bays. A railroad spur enters the building at this point, and passes through two doorways installed here. Heavy machinery arriving on flat cars is unloaded by crane. When coal is received, both doors are opened, permitting the car to be spotted in front of the coal shed which adjoins the bay on the east side. (The coal is used only for heating purposes.)

### Cranes and Hoists Are Teamed Up

As indicated previously, in manufacturing the bulk of the heavy material flows from the rear to the front of the shop. This applies to the larger types of castings and forgings, also to the gears which are manufactured from bar stock. The smaller and lighter material, which arrives machined ready for



Cleaning: Jib hoist lowers finished gear in cleaning vat, then in slusher vat, right.

cutting, remains in the front half of the shop, where the flow is from the east to the west side of the plant, as can be seen from the accompanying flow sheet.

The large castings and forgings, stored in the area adjacent to the railroad spur within the building, are moved into production by the 3-ton crane serving the rear section of the main aisle.

The heavy bars are brought into this area by hoist from outside storage, arranged under a 90-foot runway. As previously noted, the

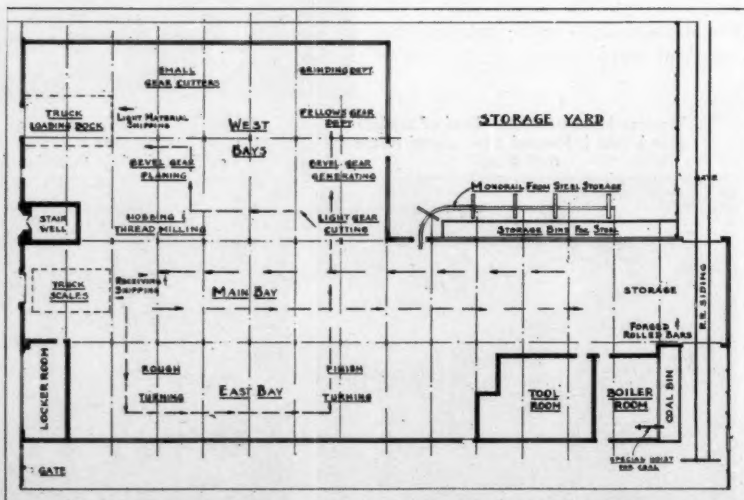
monorail for this hoist enters the plant through a side door in the west wall of the main aisle. These loads are deposited under the span of the 3-ton crane. The latter moves the heavy stock across the bay and places it in the metal sawing machine located here. Once the crane has placed the one-ton bars into the machine, it will not be called on for subsequent adjusting operations as the blanks are being cut. The reason is that a jib hoist is installed over the sawing machine. Thus the hoist relieves the crane of jobs involving lighter lifts. And by use of the jib, the hoist can also be swung out for picking up smaller-diameter bars which are stored near the sawing machine. Skidded loads of blanks from the sawing machine are transported to the machining stations by use of hand lift trucks.

Earlier paragraphs described how the smaller items are brought to the light machining department (by portable elevator and hand lift truck), which is located in the east bay of the plant. Here, too, hoists do the "heavy muscle work," speeding positioning and removal tasks and making possible the safe handling of costly machined parts.

Each machine in this department handling work weighing over 50 pounds has an individual hoist for its use. According to the product handled, these hoists are installed either on monorails or on jibs. In either case, the hoists are so arranged that the work will come in position for the chucks on the turning machines. While both chain and cable slings are used throughout the plant, both for lifts by crane as well as hoists, belt slings are employed for positioning the round blanks in the turning machines. The belts fasten themselves securely about the blanks, which are thus prevented from "walking". From this department the machined work moves west either to the gear cutting department in the main aisle, or to the two west bays located on the other side of it.

The gear cutting machines in the main aisle, which are under the spans of the two overhead cranes, are also served by numerous hoists. Each two machines have a jib hoist installed on the steel column between them. This arrangement was developed some years ago when

Layout drawing of Stahl plant shows all ground-floor departments.



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George Stahl noticed considerable waiting time on the part of operators in need of crane service. Today, however, when a small piece has to be put in a machine, the job is readily done by a hoist serving that machine. Again, the cranes are thus relieved of these lighter tasks—and there is no stoppage of production because of waiting time. According to figures compiled by George Stahl, this hoist-and-crane combination has increased production 25 per cent! At the same time more efficient and economical use is made of the heavy overhead cranes.

With certain exceptions, the arrangement of hoists in the two west bays (thread cutting and hobbing department) is similar to that in the light machining department in the east bay. (Incidentally, the shipping department for the lighter materials is to the front of the two west bays, where a covered truck dock is installed.)

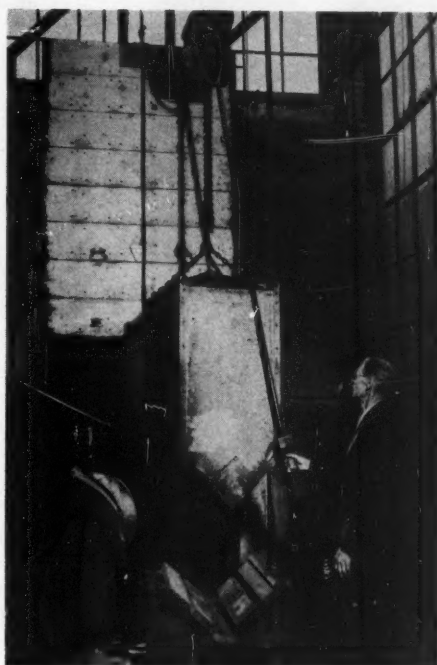
The lighter pieces processed in the thread cutting and hobbing department are easily positioned by hand. The heavier hobbing machines, however, are served by a hoist operating on a monorail about 45 feet long and extending over several work stations. Wherever necessary, special monorail sections have been installed to handle the work of certain machines. As in the light machining department, the rails are arranged so that the work is lifted parallel to the machine and can then be swung lengthwise over it for safe and accurate positioning.

### Going Up, Coming Down

Let us now follow George Stahl to see how material is transferred between the first floor and the non-metallic department on the second floor. The first thing you notice is another hoist, which is electrically operated. This is installed on the upper level at a cut-away section that provides clearance for loads passing up or down. This location is adjacent to the main receiving point on the first floor, thus providing short moves for incoming material. Throughout the year many thousands of pounds of bakelite and rawhide are hoisted upstairs, and machined blanks are lowered to the main floor for cutting. The hoist at this point is ade-

**T**HE Stahl Gear and Machine Co. also finds good use for a hoist in its boiler room. The door to the coal shed is immediately adjacent to the stoker hopper, which can be conveniently loaded when the shed is full. But when the coal supply has been used up some distance from the door, the operator would have to walk a number of steps with each shovelful to the stoker hopper. To avoid this unproductive walking, the 1000-pound capacity hopper, shown here, was designed for hoist handling. The hopper is placed on a four-castered dolly which has a V-shaped carrying surface, into which the discharge end of the hopper fits. After the hopper has been loaded (adjacent to the coal pile), it is pushed under the hoist installed on a monorail at the front of the boiler. One side of the V-bottom of the hopper is hinged and held in closed position by latches. When the load has

### HOIST IN THE BOILER ROOM



President George F. Stahl demonstrates use of 1,000-pound capacity coal hopper.

been hoisted into position, the latches are raised and the coal flows into the stoker hopper. Thus 1000-pound loads are handled at one time, and walking with a shovelful is avoided.

gate for all vertical traffic, and also serves the needs of the nearby pattern department.

The monorail on which this hoist operates is about 100 feet long. It curves past the pattern department then extends through an aisle into the non-metallic department. After a load has been raised to the second-floor level, the power plug is disconnected from the hoist and the operator then pushes the load to the desired point.

The non-metallic blanks are lowered to the ground floor by use of caster-mounted wooden bins specially designed for hoist handling. This container is approximately 48 inches long, 36 inches wide and 30 inches deep. It is reinforced with angle irons at the four corners, and through holes drilled at the ends of the supports a chain is shackled on each side. These chains have an eye in the center for hoist handling. This makes a conveni-

ent container for transferring loads up or down; and since the unit is mounted on casters (two on the sides and one fore and one aft) it is also a handy load carrier for on-the-floor use.

In the non-metallic department another portable elevator is used—chiefly for handling large sheets of bakelite into and out of storage and to the machines. The thick slabs of bakelite, which weight up to 650 pounds, are conveniently placed into the machines, and removed from them, by use of the elevator's platform which is adjustable to any desired height.

### Sending Them on Their Way

Shipping is done from two locations. The lighter materials are dispatched from the truck dock located at the front of the two west bays—another spot where hoist  
(Turn to page 47)

# HANDLING "TREET"

*When Mrs. Housewife prepares a ground meat dish in her home, she is known to squeeze the food with her hands in mixing and forming it to the desired shape. But when a large meat packer prepares millions of pounds of a ground meat product, it is apt not to be touched by human hands from beginning to end of the operation.*



of tilting bucket that conveys pork shoulder meat from formulating to grinding station.



tted clips are threaded over red; powered trol-  
inches forward, discharging meat in grinder.

By M. E. BARNES

General Manager, Armour and Company,  
U. S. Yards, Chicago

**H**YGIENIC cleanliness is a major consideration in every processing step. The procedures must not only meet rigid U. S. Government health inspection standards, but must also satisfy the packer's equally exacting requirements for purity, uniformity and appetite appeal. While modern mechanical handling devices are required by the volume processed, they also enable us to maintain our company's quality standards.

A good example of such a product

is "Treet," an all-pork, ready-to-eat luncheon meat. It is made principally from pork shoulder, with ham added, and is packed in 12-ounce cans. Here is how millions of pounds of Treet are handled by mechanical devices in our Chicago plant.

## Tilting Buckets and Conveyors Replace Hands

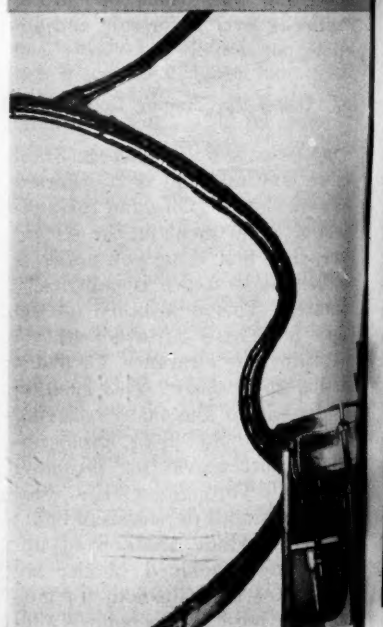
The pork shoulder meat and ham arrive from the cutting departments at the formulating station in wooden barrels. Here the meat is weighed and then discharged into the type of bucket container shown in the photos. As can be seen, the bucket is suspended from an overhead mono-rail track by means of a one-inch round carrier arm attached to trunnions. These containers have a capacity of 750 pounds, and are approximately 3½ feet high and two feet wide at the center.

The loaded buckets are transferred by means of an electrically operated pendant-controlled trolley on the overhead rail to the nearby grinding and mixing room, where a constant low temperature is maintained.

The contents of the buckets are discharged mechanically into the grinders, three of which are ar-



1500 pounds of cured ground meat being de-  
lited on skip hoist. It elevates vat for discharging  
into screw conveyor trough, for mixing.



Meat meets can; spiral conveyor feeds  
empty cans via sterilizer (arrow) to the  
filling machine.



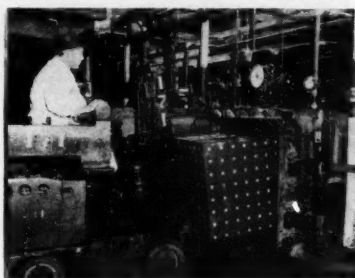
in her mixing the meat product, nning to

ranged in parallel. As the bucket arrives at the grinder, slotted clips projecting from the container are threaded over a horizontal rod. The pendant-controlled monorail trolley is then started, pulling the bucket forward. Since the slotted arm is engaged with the rod, the forward movement of the trolley raises the lower end of the bucket, tilting the upper end and so discharging the contents slowly into the grinder. The empty bucket is then returned to a vertical position, its arm disengaged from the rod on the grinder, and returned for recharging to the formulating station.

The ground meat passes from the grinders through chutes into a screw conveyor trough. The latter pushes the product through discharge spouts into mixing machines located on the floor level below. The discharge spouts in this screw conveyor trough can be set to deliver the ground meat to any of several mixing machines which are arranged in a straight line. The mixing machines, incidentally, are similar in construction and action to the mechanical dough mixers used in bakeries.

At the end of the mixing period, the machine is hoisted into the discharging position and the ground meat is mechanically released by the revolving mixing paddles into wooden vats. In the latter the meat is allowed to cure for a specified period before being further processed. These vats, which have a capacity of about 1500 pounds, are moved by hand lift truck to the curing room which is immediately adjacent.

At the end of the curing period, the full vats are returned to this room for remixing. They are now transferred to skip hoists, one of



Retort basket with 1200 cans of Treet being deposited by fork truck into retort.

which is installed at each end of this line. The bed of the skip hoists consists of gravity rollers, which facilitates the proper positioning of the heavy containers. The hoists elevate the individual vats to the height of the screw conveyor operating on the upper floor level (where the grinders are located). Angle iron retaining units hold the heavy vats as they are inverted and their contents discharged via a hopper into the screw conveyor for remixing. Since a skip hoist is located at each end of the line, the screw conveyor moves the meat from the ends toward the middle. In this way, many hundreds of pounds of the as yet uncooked luncheon meat are returned speedily and efficiently to the machines for the second and final mixing. This assures uniform blending of the meat and proper distribution of the spices that are now added.

When the mixing is completed, the cured meat is discharged di-

rectly into four-wheel tank trucks. The individual trucks have a capacity of 1500 pounds, which corresponds to the amount of a batch in the individual vats. The trucks are coupled into trains of three to five units each and are thus hauled by industrial tractor to the stuffer, which operates in conjunction with the filling machine. (The stuffer feeds the meat to the filler.) Handled in bulk form during the preparatory steps thus far, the meat is now ready to be packed into the familiar white-and-red cans.

### Filling and Handling of 12-ounce Cans

The same care and handling in quantity that characterize the handling of the raw product in bulk form can also be observed in the canning and subsequent operations. At the filling machines, the empty cans are fed from an upper floor via a gravity spiral-shaped conveyor shown in one of the photos. The empty cans first pass through a sterilizer, from which they emerge in an inverted position, permitting every drop of water to drain out before the units enter the filling machine. Twists position the cans properly.

The filling machine has a capacity of 120 12-ounce cans a minute. The full cans pass over a belt conveyor to two automatic vacuum closing machines, each of which handles half the output of the filling machine. Near the point where the two lines branch out, cans are periodically taken off for a spot check on weight. Deviations of a minute fraction of an ounce are called to the filling machine opera-

(Turn to page 53)

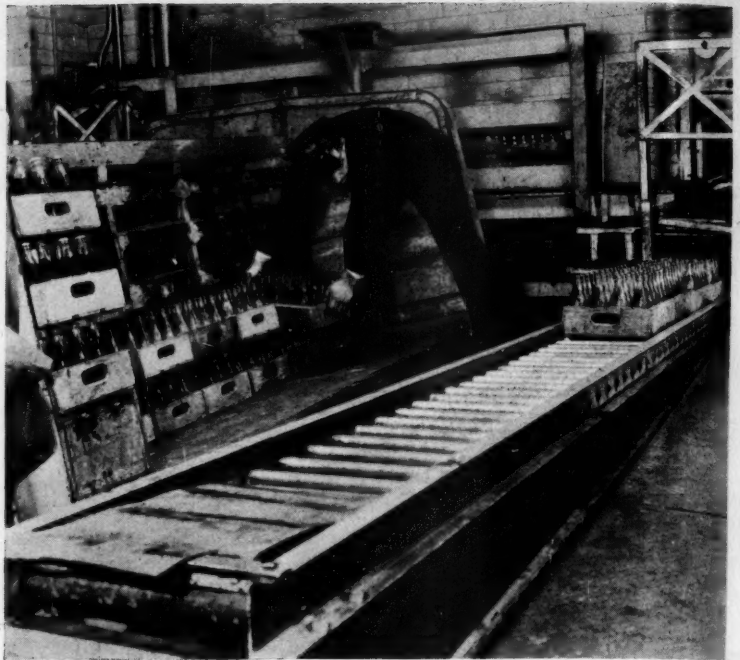
The cans are individually dried as they emerge from final washing, then move to packing station.

Cans have now been changed from upright to horizontal position by off-set, ready for packing.

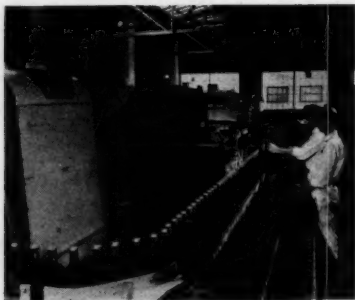


# NO PAUSE for Handling

*This Coca-Cola bottling plant uses a system that loads 240 cases in 12 minutes . . . helps eliminate handlings.*



The hinged roller conveyor is adjusted to carry empty cases from truck to basement.



Filled and inspected bottles are removed from slat conveyor and placed in the empty cases.



**W**HENEVER possible, unloading, bottling and loading are carried out as continuous operations at the Coca-Cola Bottling Works Co., Cincinnati. If the cleaning and bottling machines are in operation, the empty bottles go directly from the trucks into the production line. When practical, the filled bottles by-pass the stockroom and go from production into the waiting trucks. This method eliminates the four handling operations involved in taking both the empty and filled bottles in and out of storage. Such a saving is important in a plant with a production capacity of 500 bottles of Coca-Cola a minute.

## 240 Cases in 12 Minutes

Six loading and unloading docks for "A" type trucks and one dock for highway trailers are located in the spacious garage. The "A" or tent type trucks are used to distribute the product throughout the local area because they make possible easy loading and unloading in the field and at the plant. Six

A deflecting arm is inserted across the two conveyor lines to control the line of travel.

gravity roller conveyor branches service the docks. They extend the full length of the vehicles, on checkered steel platforms that are flush with the bed of the trucks. This permits the driver to stand in a convenient position when loading or unloading.

Each of the six branches of conveyor sections is hinged at one end and attached to a counterweight at the other. By lowering the free end, the line is connected with the conveyor system that carries empty cases to the basement. When the free end is elevated, the branch is aligned with the system which brings loaded cases to the dock. By using this installation, it is now possible to load or unload 240 cases in 12 minutes. This is significant when compared to the former method which required 25 minutes for the same operation. Moreover, it is no longer necessary to move the truck during loading or unloading.

The dock for highway trailers has a similar gate section which connects with the two conveyor systems for empty and loaded

cases. A portable roller conveyor, however, is moved into position at the end of the hinged section and extends into the trailer. Unloading and loading operations are thus simplified.

#### Special Conveyors for Intricate Jobs

The conveyor sections which carry empty cases to the basement are powered endless rubber belts with treads to keep the cases from slipping. These lines move at a slow rate of speed and discharge onto a small powered booster belt conveyor, which transfers the cases onto a roller line. This conveyor circles the entire storage area and carries the empty cases past four loading stations for cleaning and sterilizing machines on the floor above. The cases circulate on the roller conveyor until they are removed to the loading stations. Empty cases are placed in storage only when the sterilizing machines are not in operation.

At the loading stations, the bottles are touched by hand for the first time as they are removed from the cases and placed in a magazine feed. This transfers the bottles in rows of 16 to an endless conveyor which holds them upside down as they are carried up through an opening in the ceiling into the sterilizers for a 35-minute period. A total of 21 different cleaning operations are performed on the bottles during this time. At the end of the line, the bottles fall between guides which set them right side up on a metal slat conveyor.

Now the bottles move past the first filling station where the syrup is injected. The conveyor transports them onto a revolving platform chain, each bottle stopping on its own platform. As the machine circles, the individual platform with side supports rises and forces the top of the bottle into a valve. This releases exactly the correct amount of syrup. After the bottles make one revolution of the machine, they are transferred onto a conveyor which feeds the filling machine.

The filler operates on the same platform-and-valve principle as the syruer. However, this machine is larger and the "ride" is longer since there is a larger quantity of water than of syrup to be put into each bottle. The water comes

(Turn to page 48)

## SPEED HANDLING WITH *Farquhar* CONVEYORS



MODELS 391 and 432  
Standard sizes:  
14' to 50' long.

## FREIGHT CONVEYORS FOR BAGS, BOXES, CASES CARTONS, CRATES, HAMPERS, ETC.

Farquhar Freight Conveyors . . . used singly or in tandem . . . can be set up quickly to move materials with speed and economy. These Conveyors can be fitted with casters attached direct to frame for horizontal conveying or furnished without wheels or casters for permanent installation (carrying from floor to floor). All mountings easily interchangeable.

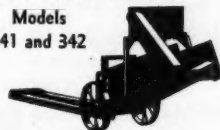


THE ACE  
Model 334-3

For Handling Coal and Coke

#### PORTA CAR UNLOADER

Models  
341 and 342



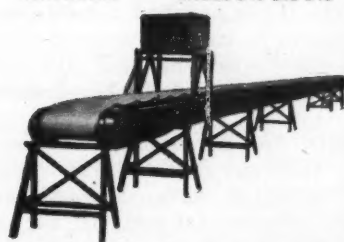
Speeds Up Car Unloading.

PORTA TROUGH  
Models  
334T and 343



For Handling Sand, Gravel, Soil, etc.

SECTIONAL  
Models 346 and 348



Troughed or Flat Belt for Handling  
All Kinds of Loose or Bulk Materials.

Write for complete information today covering these money savings Conveyors

### *It Pays to Convey the Farquhar Way*



PORTABLE OR PERMANENT MATERIAL HANDLING CONVEYORS FOR  
COAL · COKE · SAND · GRAVEL · BAGS · BOXES · CRATES · CARTONS · BARRELS · ETC.

#### PORTABLE MACHINERY DIVISION

NINETIETH ANNIVERSARY YEAR

1856

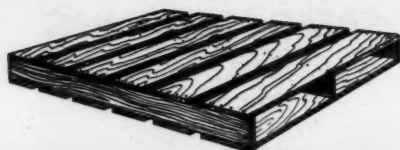
A. B. FARQUHAR COMPANY

1946

206 Duke St., York, Pa.—616 W. Elm St., Chicago, Ill.



ON THE



PALLET

## NEWS VIEWS TRENDS

**E**STABLISHMENT of the first public merchandise warehouse in the history of Reno, Nev., the Bender Warehouse and Storage Co., has been announced by E. S. Bender, who heads the new company. Construction of its facilities was completed in April. Two buildings comprise 45,000 square feet of storage space, and construction of a third unit, now under way, will raise the total available space to 60,000 square feet. The one-story properties are designed for in and out handling for railroad sidings.

The company provides facilities for manufacturers and distributors who service the Reno and surrounding Nevada, California and Oregon markets.

**N**EW and varied uses for wirebound types of containers have been developed through the application of skilled engineering and designing techniques to specific packaging problems, according to L. S. Beale, secretary of the Wirebound Box Manufacturers Association. Further opportunities in this direction are open to the trained packaging engineer, said Beale, citing the following example. The weight of a container for shipping boiler parts was reduced 75 per cent through special engineering and designing of a container. This means a saving of critical forest products through the use of steel in combination with wood.

The Wirebound Box Manufacturers Association is preparing to launch a program within its own industry for a course of study and training to develop "wirebound engineers," Mr. Beale revealed.

**T**HE first peacetime application of the war-born "unit" electric power plant has been announced by William E. Knox, vice-president of the Westinghouse Electric International Co. He disclosed that a 5,000 kilowatt plant is being installed in Colombia and soon will be providing electrical power at Barranquilla, the country's major sea port.

A big brother of the packaged power plant, this unit contains all the necessary parts of a power station. The power generating unit used is of new design and is the first application of such principles employed in land turbines for this capacity.

The plant is being permanently erected at Barranquilla. Along with a duplicate unit now being manufactured, it will furnish power for textile and flour mills, breweries, oil refineries and soap factories. The 5,000 kilowatt unit power plant in Colombia is of a size sufficient to provide electric power for a residential city of 25,000. (Early packaged power plants, which were sent to European countries, generated only 1,000 to 2,000 kilowatts of power.)

**W**ITH the passing of the acute phase in the nation's copper shortage, industry has leaped another hurdle in its efforts to speed new cars, refrigerators, electric appliances, plumbing and wiring fixtures to an impatient public, according to the N.Y. Journal of Commerce. Hard hit by the shortage has been the manufacture of electric motors for washing machines, vacuum sweepers, automobile starters and generators and other items requiring electric motors.

Requirements of refined copper by American industry for the second half of the year are calculated at 600,000 tons. Production in this country is expected to yield about 350,000 tons. Plans call for the import of 150,000 tons. Government stockpiles of copper are expected to furnish approximately 100,000 tons to make the required total of 600,000 tons.

**T**EN thousand representatives of management are the goal of the National Association of Foremen at the Twenty-third Annual Convention to be held in St. Louis, Missouri, on September 12, 13, and 14, 1946. The speakers' list includes such notables as Charles R. Hook, president of American Rolling Mill Company; C. F. Kettering, vice president of General Motors Corporation, and Harry Woodhead, president of Consolidated Vultee Aircraft Corporation. C. R. Hook will address the Convention on: "A Company Grows as the Men Grow." Kettering's address is: "America, What Do We Owe You?" The topic selected by H. Woodhead is: "Management Men Must Manage."

Complete convention details can be obtained from National Association of Foremen, Convention Headquarters, Forest Park Hotel, St. Louis, Mo., or National Association of Foremen, National Office, 11 W. Monument Bldg., Dayton, Ohio.

**I**T SEEMS that after centuries of poverty-stricken existence, the vast country of India wants to go modern. According to the N. Y. Journal of Commerce, India is looking to the United States to furnish the industrial machinery to do it. Hundreds of millions of dollars worth of orders have been placed tentatively in the United States by Indian princes, rajahs, businessmen, and industrialists. Some American exporters have reported fabulous contracts equalled only by the great wealth of the rulers placing them.

Inquiries for textile plants are up in the thousands, it is reported. Indian businessmen and government officials are said to have inquired about shoe making machinery, vegetable oil plants, equipment to make fertilizers, glass, heavy chemicals and many other products.

"BOUND TO GET THERE" *Safer . . .*

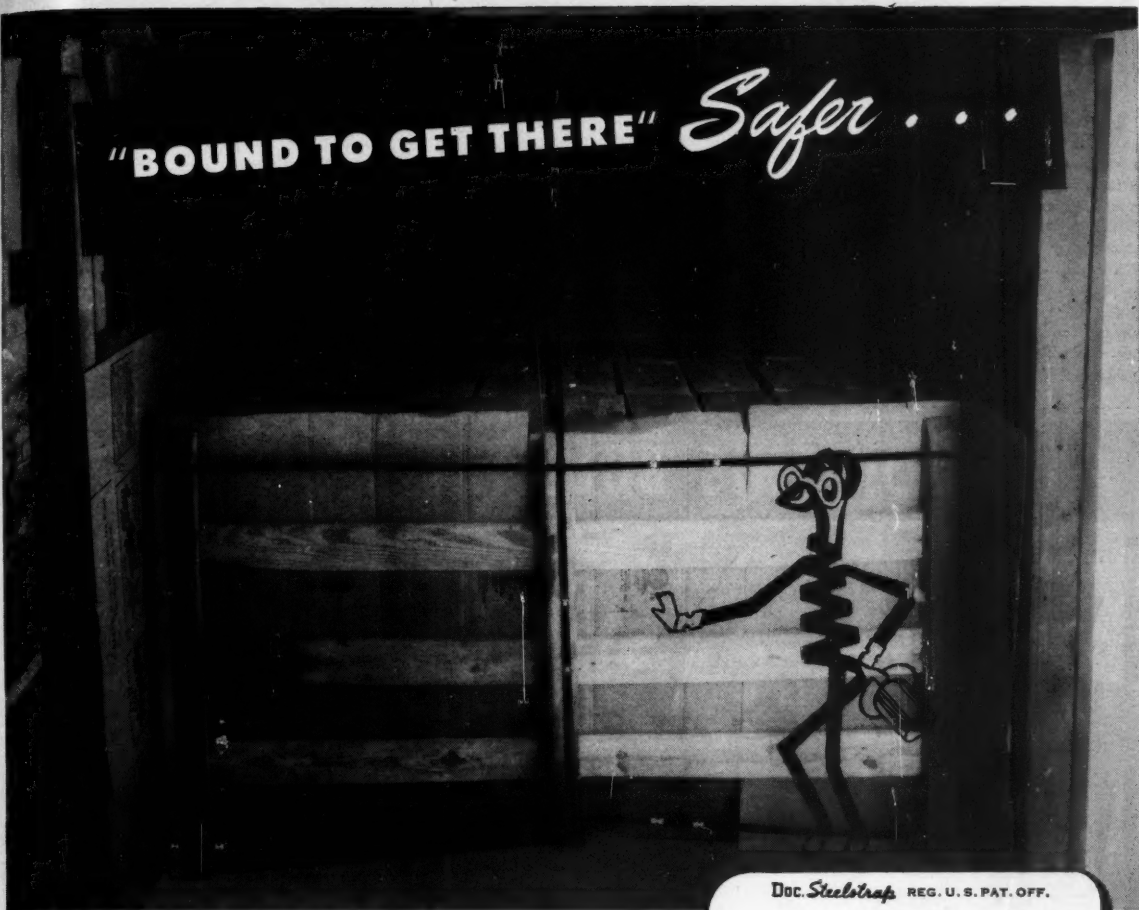


Photo of an actual shipment using Acme Unit-Load Principle.

## with ACME *Unit-Load Method*

Damage in transit is nil when Acme Unit-Load Band combined with Acme Unit-Load Methods are used for carload shipments.

Cash savings in dunnage and labor accrue directly in most instances when modern Acme methods of car bracing are adopted.

Acme Unit-Load Methods take the hazards of everyday shipping right in stride . . . protect products all the way to the customer's door.

Acme Packing and Shipping Specialists will gladly demonstrate a Unit-Load Method tailored for safer, more efficient shipping of *your* products. Inquire now.

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## TRANSIT HAZARDS ELIMINATED ON FOOD LOCKER SHIPMENTS

In carload shipping of metal food-storage lockers *without the usual protection of wood or paperboard containers* Acme Unit-Load Method efficiently turned the trick. Lockers arrived in excellent condition, unmarred and undented. Moreover, a cash saving of \$340 per car was realized.

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ACME STEEL COMPANY

ACME STEEL CO.  
CHICAGO

AUGUST, 1946

## INDUSTRIAL PACKAGING APPEAL

By Fred Grede

International Harvester Co.

What are the essential basic fundamentals to take into consideration in streamlining our packaging program to meet today's method of merchandising? First, the product demands, in most cases, the use of a corrosion preventive. Care should be exercised in the selection of the material to be used for this purpose to insure adequate product protection and at the same time preserve as much as possible the eye appeal afforded by the mechanical attractive-

ness of a precision machined part. For customer convenience a preventive should be selected that can be removed with little or no effort. Wherever necessary, additional protection can be provided by the proper selection of specially treated wrapping paper to prevent soiling of the outer container by saturation of the corrosion preventive, and to minimize the possibility of soiling the container during the filling operation. The display value of any package is lost when it accumulated dirty and greasy finger marks through handling.

Utmost care should be taken in the selection of the material to be used in the outer container, ample product pro-

tection should be the prime consideration. Size, weight and shape of the product are also important factors in the selection of the material to be used. Over-packaging is a common practice where the product has not been previously analyzed. The material selected should be one that is readily obtainable from many sources and one that lends itself well to the various methods employed in the printing industry.

The type of carton to be used demands careful consideration. There are many types of folding cartons and set up boxes available today. Before determining the type carton to use a thorough study should be made of the methods used in the plant to fill and seal the cartons, the manner in which they are to be distributed, whether they will be practical to produce and convenient to handle and display at the point of usage.

The next step is to dress up the carton. The selection of a trade-mark or symbol in keeping with the product is of utmost importance. One that will adapt itself readily to all sizes and shapes of cartons and can be easily reproduced, minimizing register problems and other difficulties commonly encountered in printing, simplicity in design and a clearly apparent family relationship throughout the entire line. A formula should be worked out to permit combination in a number of different ways. This flexible arrangement will permit the use of the basic design on all types of containers or wrapping material. Particular attention should be given to the printed matter or product identification. It should be of a type, size and face easily legible at a distance.

To fit in with the present methods of merchandising a complete description of the content should appear in a prominent position on the carton. Care should be taken in the selection of the color combination used. It should be in keeping with the product. Soft carefully blended shades produce a package that is pleasing to the eye. Strong, harsh colors should be used with extreme care. The time and money spent on engineering, designing, research and manufacturing of a product, plus the expense involved in advertising and handling, certainly warrants a package in keeping with the product.

Careful planning will result in a carton that will carry enough visual appeal and attraction to create a buying urge. The buying public has been educated to this type of package and invariably selects it. Great strides have been made in the proper direction in packaging industrial items and still more plans are ahead.

The basic functions of a good package will always remain the same. They afford protection, facilitate handling and storage and are a definite asset in creating sales for your product. Keep your packages as simple, yet as attractive as possible and make sure that they provide adequate product protection. Design them in such a manner that they will serve the needs and demands of your particular market. You will find that a carton so designed will be an extremely effective silent salesman for your product.

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- Transports work
- Elevates work to Press Bed Level
- Positions work
- Transfers work to different levels
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**H**ERE are new, ingenious answers to many material handling problems found in almost any plant, provided by a single piece of equipment—Lyon-Raymond Portable Hydraulic Elevating Table. Shows labor-saving applications in actual shop views. Full details of equipment for particular operating conditions, featuring unusual adaptability, also convenience and safety provisions. Special variations (illustrated) offer suggestions your methods engineers may find helpful. More than just "descriptive literature", this bulletin offers real working information. Write for your free copy today.

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FLOW



Photo No. 2, left: Green blocks are placed from block machine onto type of multiple-tray rack shown, which is just about to be picked up by fork truck for movement into near-by steam curing room. These kilns are designed to accommodate maximum number of racks without waste of space. With curing in steam kilns completed, the racks of finished blocks are moved by truck to cubing section. See below.

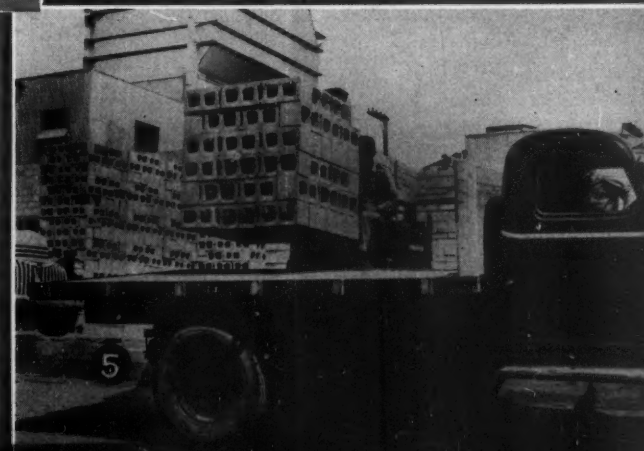
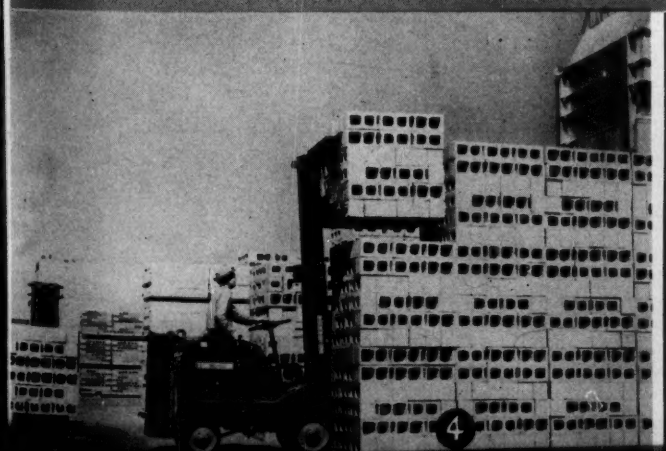
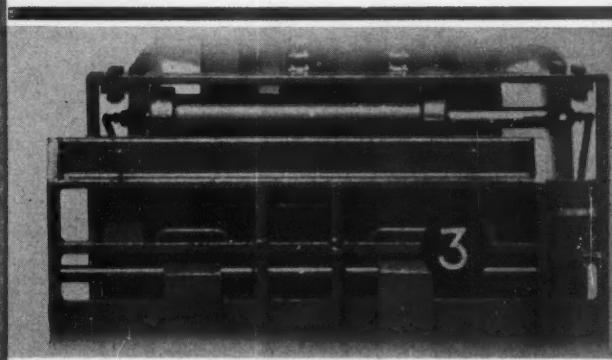
# Building for the Future



• The photos on this page illustrate cube handling of building blocks at the Hartner Marblecrete Stone Co., Oklahoma City, Okla. Illustrating speed, efficiency and economy in moving, stacking and loading operations, they are offered here as illuminating examples of unit load handling in the brick field. While specially designed 6-tined forks are employed for these 2-hole blocks, another type of fork is widely used for 3-hole blocks.

Photo No. 1, above: Here blocks are built into solid cubes for subsequent power handling in units without racks. Cube being built, left of photo, shows arrangement of blocks. Layer across bottom is built so that multiple forks of truck will extend through holes in all blocks, thus making secure, compact load. Since these are two-hole blocks, with three blocks to layer, truck forks have six tines. Complete cube consists of 108 blocks. Photo No. 3: Front view of side shifter, which adjusts multiple truck fork two inches to either left or right side. This eliminates maneuvering on part of truck when it approaches stack of blocks to remove a cube. Side shifter aligns forks. No. 4: View in storage yard illustrates efficiency, convenience and space conservation. Cubes are stored three high—and every time stock is handled, 108 blocks are moved. No. 5: Efficiency and speed of the cube is again shown in truck loading. Biggest trucks are loaded in minutes, and rehandling is avoided.

(Photos on this page, courtesy Towmotor Corporation.)

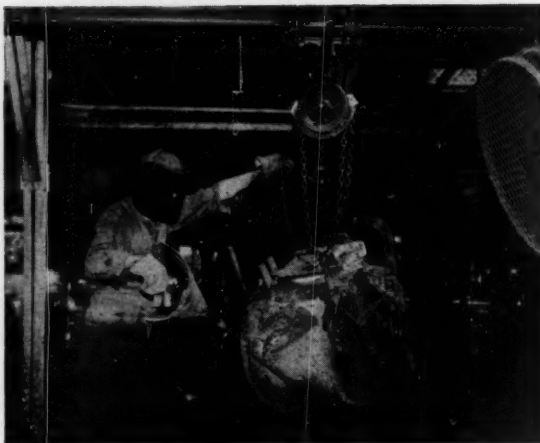




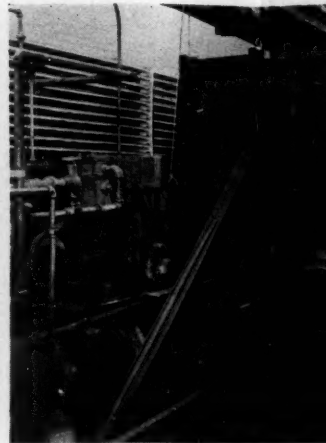
Loading sea coal with clam shell bucket and steam-driven locomotive crane.

# MODERN FOUNDRIES HANDLED

*From cupola to highway truck, from raw material to finished castings, cranes and hoists are playing a major role in this automotive casting manufacturer's plant. Standard conveyors and powered trucks, along with good working conditions, are other aids to high production in this foundry.*



Operator preparing to pour molten metal into mold. Note protective devices used.



Hydraulic pusher shoving car loaded pots from the transfer

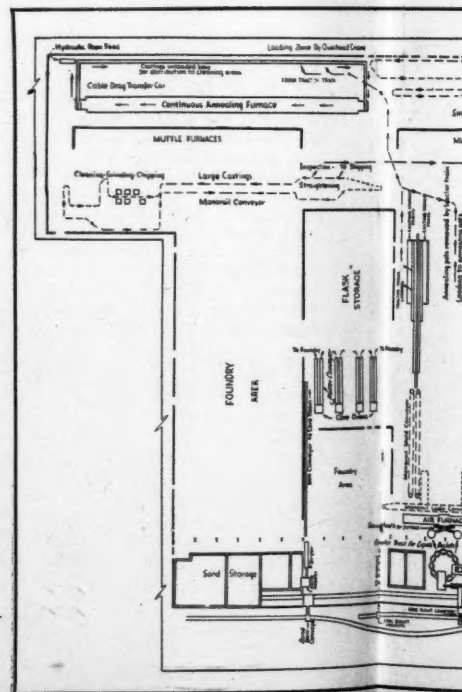
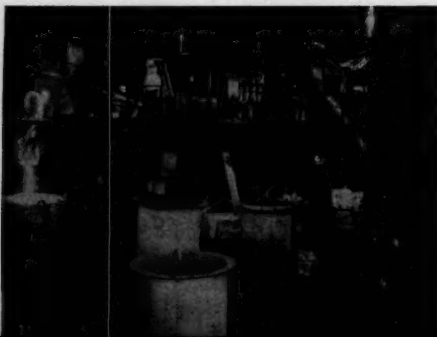
**F**OUNDRIES as a rule operate with large quantities of raw material. Scrap, coal, coke, pig iron and other ingredients must be conveniently stored within easy reach of the melting furnaces, where they begin their journey toward the completed castings. Further provisions are also required for conveying such things as the coal to be pulverized for the melting furnaces, sand to the molding stations, and the castings themselves must be transported through the process so that numerous operations may be performed before their completion.

The large Cleveland Works of the National Malleable and Steel Castings Co., melting in the neigh-

borhood of 500 tons per day, stores its raw materials in the rear yard of its large and highly mechanized foundry. This yard, containing piles of coal, coke, scrap, etc., is networked with railroad spurs so positioned to facilitate the handling of huge quantities of raw materials. A locomotive crane is used in the yard to handle the material with either a clam shell bucket or an electric magnet. The latter is used mostly to lift the scrap which comes in various forms consisting of plates,

Magnet attached to 10-ton bridge crane depositing stock into cupola bucket.

Cupola crane depositing cupola bucket to car mounted on 40-foot circular track.



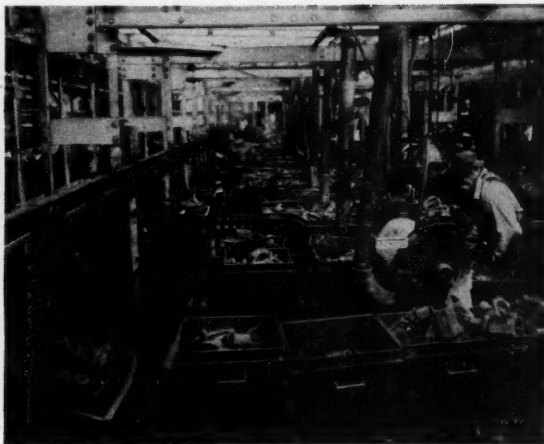
Flow diagram shows route of steel and malleable castings right to the shipping department at the upper right of the small castings to joint loading dock; the two lines

# DERN NDRY DLING

Platform lift truck loading small parts on truck. Note screw-lift dock board.



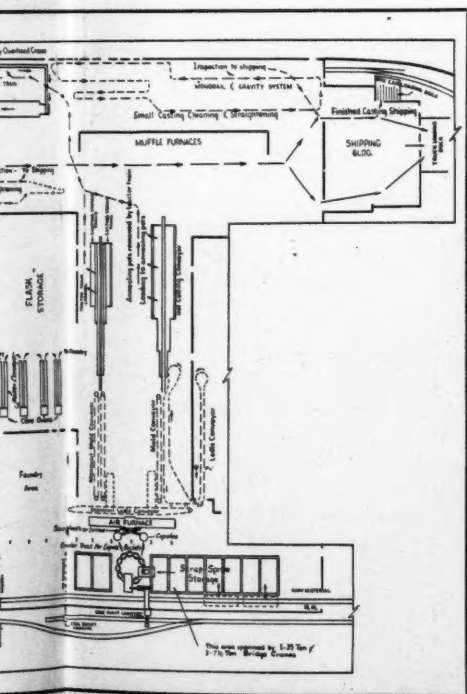
Worker shoving car loaded with annealing parts from the transfer track.



Gravity and monorail handling of small castings through grinding and chipping.

locomotive crane, are pulled into the building by a fireless locomotive which requires two charges of steam per day. Hopper cars containing coal and coke are positioned so that their contents are dumped upon a belt conveyor, which in turn transfers the material to a vertical bucket conveyor and then deposits it into a hopper for temporary storage. Pulverized coal is carried by screw conveyor to a similar position. Scrap is loaded by magnet and is temporarily stored either in large bins or on platforms adjacent to the charging chutes.

This section of the charging floor is serviced by three  $7\frac{1}{2}$ -ton bridge cranes and one 35-ton crane, the runway being 75 by 600 feet. Centrally located in this area are the two cupolas, each with its connecting air furnace, forming a duplex system of melting. The charging buckets which are cylindrical in shape and have a conically shaped bottom, rotate on a circular track



and multiple castings from raw material receiving at lower right of the chart. Note routing of large and small castings in two lines as separated during production.

bars, rails and channels from three to four feet in length.

Gondola and hopper type railroad cars, after being loaded by the

Operators strapping axle housings. Note staggering of ends and dual handling.





about 40 feet in diameter. During their rotation they are filled with the proper amounts of scrap, coke, etc., by passing under charging chutes.

The loading of ingredients into the cupola buckets is particularly interesting from a handling standpoint. As shown in one of the photos, the buckets rotate under two loading positions; one for coke and the other for steel. Scales located at the loading positions weigh the amount of material which is deposited into the buckets. Large dials with heavy markings make it possible for the crane operator to readily see the weight of the material he is loading, thus insuring accurate weights without the aid of signals or other methods from the floor.

### Monorails and Hoists

As the molten metal flows from the cupolas to the air furnace, a two-way chute layout is used, as shown in the flow diagram. This method permits using one cupola or the other without rearranging the discharge trough.

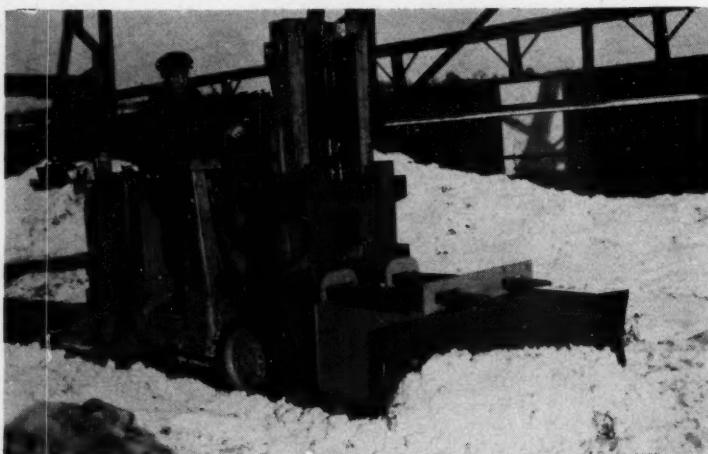
Ladle handling is achieved through an extensive monorail and hoist combination, which travels alongside the air furnace and through an elaborate system of switches to various pouring stations. The hoists provide the vertical adjustment needed for varying mold heights (see photo), while the monorail serves for horizontal movement of the 600-pound capacity ladles.

The small and medium sized molds ready for pouring are placed on a tray type conveyor which carries them past the pouring stations, making the pouring operation continuous. After the molds are poured and travel a sufficiently long time for cooling, they are shifted onto a shakeout conveyor which vibrates them to loosen the free sand.

At the shakeout the sand drops through a grating into a reciprocating flight conveyor located in a pit directly underneath, feeding toward the elevators. Other flight conveyors pass under the molding stations and collect the overflow of sand from the molding operations. From the pit the sand is conveyed vertically by elevator buckets up to a

### FORK TRUCK SNOW PLOW

**A** SPECIAL readily-assembled snow plow is used by the Erie R.R. at its central scrap reclamation plant in Meadville, Pa. The plow is made of steel plate cut from dismantled railroad cars



and welded at the seams. The inside is hollow to form a container for gravel or slag which can be shoveled under the fork truck wheels for any traction needed.

The upper supports which fit over the forks are also cut from scrap material, and welded to the main frame. Slots large enough to accept the forks are burned from the supports, and the unit is slipped into position. Since the pressure during use is from front to back, no other devices are needed to hold the plow in position.

*Courtesy, Erie Railroad Co.*

belt conveyor for tempering, which carries it to a pug mill and revivifier before returning it to the molders, who again obtain it from overhead hoppers.

The hot castings, emerging from the shakeout, fall onto a slat type conveyor. On this they are moved before a line of operators who knock off the sprue and place the castings into tumbling barrels for cleaning. The barrels are then emptied onto chutes which bring the castings to the trimming and packing operations.

The smaller and medium sized castings are placed in annealing pots which are brought to and from the annealing furnace by tractor-train method. The four-wheel, solid rubber-tired trailers are of structural steel construction, an angle forming the retaining feature with the bottoms of the pots. The front and rear wheels of the trailers steer simultaneously, accomplished through an x-type leverage arrangement between the front and rear axles. The tractor usually hauls four to six trailers.

### Bridge Crane Teams With Cable Pull and Hydraulic Ram

The 350-foot-long continuous annealing furnace (shown at the top left in the flow diagram) handles hundreds of tons daily. Loading the flanged wheel annealing cars is done with a 2-ton crane lifting the pots from the trailer-train. Two holes are cast in opposite corners about halfway between the top and bottom of the annealing pots. Spreader hooks are placed one in each hole, resulting in even balancing on lifting, and making it possible to revolve the pot to dump it following the annealing operation.

After the pots are loaded on the annealing car, a cable is attached and by means of a winch the loaded car is pulled onto a transfer car. The transfer car then moves the load into the furnace entrance. From there the cars are pushed by a hydraulic ram, one against the other in a continuous line from entrance to exit. Every time a car is charged into the furnace, one is

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The furnace will accommodate 83 cars measuring 4-foot by 6-foot 6-inches. The method of removing a car from the discharge end of the furnace is to hook the car with a chain and rope tow and pull it onto a transfer car by use of an 8" winch head which is driven by a 5 h.p. motor. To move the transfer car from the end of the furnace, a standard 5/8" drag cable is used, with the drums driven by a 3 h.p. motor. This places the unit on a track, in line with previously unloaded cars. Following a cooling period, the pots are dumped onto steel tables by means of a 10-ton bridge crane. They are then sorted into "large" and "small" classifications and placed on their respective finishing department conveyors.

#### Gravity Conveyors and Monorail System

The smaller castings are placed in steel boxes which are in turn rolled onto a tray-type conveyor. These steel boxes are approximately 18x18x12 inches deep. Two sections of 12-inch gravity conveyor are mounted at either side of the grinding stations, which hold the full boxes of castings. Extending lengthwise and at right angles to these sections is a 2400-foot monorail system carrying steel slings. The slings have a frame mounted at the bottom which supports four 12-inch gravity rolls. These form the carrying bed for the boxes.

The operators merely roll the loaded boxes from the gravity section directly onto the conveyor tray rollers, eliminating lifting and fatigue. The boxes are held on the rollers by gates which are brought down on both sides. Empty boxes are returned for additional castings by hanging them on the same monorail. This monorail-and-gravity system also extends through the straightening operations, where distorted castings are placed in huge hydraulic presses and die-straightened to exacting limits.

The larger castings are hung or placed onto a different monorail conveyor, consisting of hooks and trays. This system extends 2300-feet through the finishing section, where the castings are ground and chipped. Castings which are too



**S**LOW, laborious stair-climbing with arms full of packages is costly material handling — and adds nothing to the quality of your product.

Floor-Veyors speed the movement of materials between floors . . . they break the bottleneck of inaccessible and over crowded elevators and tedious man-handling processes.

Rapids-Standard Floor-Veyors are power belt conveyors manufactured specifically for use in between floor operations. Easy to install, they can even be placed in stairways without seriously interfering with foot traffic. Floor-Veyors are standardized units and are shipped in any specified length up to 30 feet. They are crated and shipped as a finished product, ready for immediate installation without difficult erection problems or costly fabrication work. Your "handy-man" can easily cut a floor opening and set this unit into place.

Floor-Veyors are simple in operation and are fool-proof. They operate on any standard electric current, including regular lighting. Being available in standard belt widths of either 12 or 16 inches they will handle a wide variety of diversified products easily and smoothly.

*Floor-Veyors are low in first cost and are economical in operation. They will considerably reduce your handling time and costs and will speed the flow of your goods throughout processing, storage and delivery operations. Full information on request.*



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*The Rapids-Standard Co., Inc.*

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large to be handled on these chain-type conveyors are handled through the various chipping, grinding, and cleaning operations by electric hoists, steel skids and powered trucks. Temporary storage between operations is provided by use of large permanent-type bins.

Following the straightening and inspection operations, the castings are placed in steel skid bins, and by use of powered trucks are taken to the shipping room. The later is arranged to handle both rail and L.C.L. truck shipments.

### Steel Strapped Unit Loads

It is rather interesting to note that the large axle housings (commonly referred to as "banjo housings") are strapped into unit loads before shipping, as shown in one of the photos. Two-by-four wood inserts align the 1½-inch straps, making a sturdy 12-axle unit. A fork-lift truck carries the one-ton load of axles into the box cars. These unit loads lend themselves to easy transportation as well as providing economy of storage space.

Many different types of dock boards are found in plants, due partly to the varying heights which must be met in over-the-road truck loading. As shown in one of the photos, the Cleveland Works of the National Malleable and Steel Castings Co. uses a screw lift type steel dock board. Six-inch channels welded to the sides form a rigid support longitudinally, while the half-inch steel dock board is held at the adjusting end by a 10-inch beam. Flanges approximately four inches square are welded at each side of the beam and have a hole burned out with a threaded plug inserted and welded in position. Through this plug the adjusting screw (1-inch diameter) is run. By using this method, more thread bearing can be used and less stripping is experienced. Adjustment is made by using a hand crank approximately 36 inches long, which permits adequate leverage and eliminates stooping.

### Keeping the Foundry Clean and Safe

Among foundry men this problem is a very vital one. Aside from the standpoint of good housekeeping, a health factor must be main-

#### SELF-LOCKING SAFETY PLATFORM

*This special safety, wide-area platform is used in conjunction with high-lift platform trucks in the Rahway, N. J., plant of Merck and Co., manufacturing chemists. It is a special slip-proof metal platform, 36"x66"x¾", which is fitted over the truck's regular platform.*

*Two metal lugs are welded on the one side at the rear of the regular platform. The detachable platform carries two crooked "fingers" at one end. These slip under the lugs, locking and anchoring the superimposed platform.*

*The detachable units, which weigh several hundred pounds, are stored*



*on the type of inclined rack, or jig, shown here. By use of this rack, one man is enabled to attach or detach the platform by manipulating the truck forwards or backwards, simultaneously raising or lowering the platform. The racks are located adjacent to the area in which the trucks operate. Both the detachable platform and rack were developed by the Merck Company.*

*The larger, slip-proof platform is used in loading and unloading operations, frequently in an elevated position, providing safe and sufficient space for an operator to stand on. When one man operates the truck and also loads and unloads the raised platform, a remote control lever enables the operator to elevate or lower the platform in safety while standing on it.—Courtesy, Electric Industrial Truck Association.*

tained. Smoke and dust are probably the two worst offenders; although they may not be entirely eliminated certain controls can be effected.

This plant uses several methods of control. One is a plant-wide exhaust system which exhausts one-quarter of a million cubic feet of air per minute. Another is the use of two powered floor sweepers which are in constant operation gathering dirt and dust from the floor. Machines producing dust during various processes, such as cleaning and grinding operations, are also equipped with exhaust systems (see photos of grinding operations).

As a further health precaution, the company maintains a fully equipped X-ray department which provides all its employees with compulsory, periodic examinations.

At the mold pouring stations, operators are required to wear a

protective face shield, asbestos gloves and leggings, heavy aprons, and safety shoes to protect them from the molten metal. Man coolers have been installed in areas subjected to the most heat, which is especially helpful during the summer months. Metal guards are provided on all the ladle tilting-handles as an added protection. Safety shoes (already mentioned) are a "must" in this organization, and frequent campaigns and contests emphasize their benefits.

The high production in this foundry is attained through the use of cranes, hoists, conveyors, powered trucks and other handling devices. Adoption of modern methods, application of sound engineering practices, and constant perseverance to maintain efficient operating conditions, has made this company one of the foremost producers of high quality malleable iron and steel castings in the country.



**ROLL OUT THE BARRELS  
...THE LOW-COST WAY!**



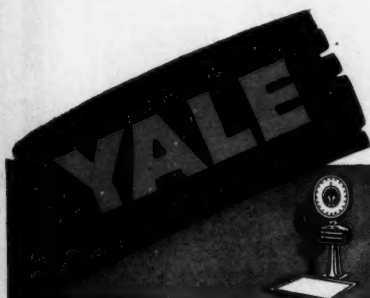
Here's *one man* moving five heavy barrels without even taking a deep breath! If moved by muscle power, it's a good bet these barrels would be man-handled individually—with chance of damage to containers and products, and even injury to the worker. But here, a single operator shifts the "whole shebang" quickly, *safely* . . . thanks to palletization and the easy-lift, easy-roll, easy-steer Yale Load King Pallet Truck.

Whether it be raw materials, goods in process, or finished products—whenever materials are lifted and shifted in your plant—"muscle power" costs you "muscle money" in needless waste of time and effort.

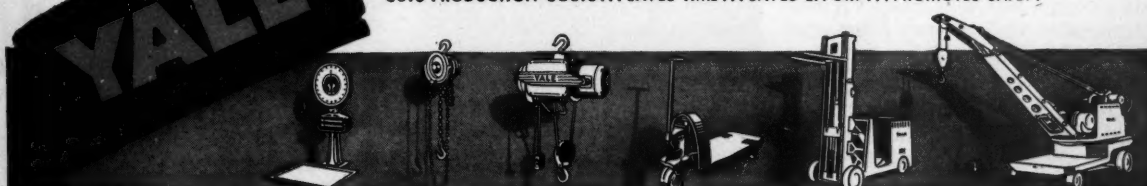
Take this profit-eating "muscle money" off your payroll. Put fast, efficient, easy-to-operate Yale Hand Lift Trucks, Electric Trucks, and Hoists to work. They step up production, lower unit costs, eliminate wasteful rehandling, conserve worker energy, and give you the best possible use of storage space.

Full information about Yale Material Handling Machinery, including Kron Scales for all industrial needs, is yours for the asking. Phone our nearest representative or write to us direct.

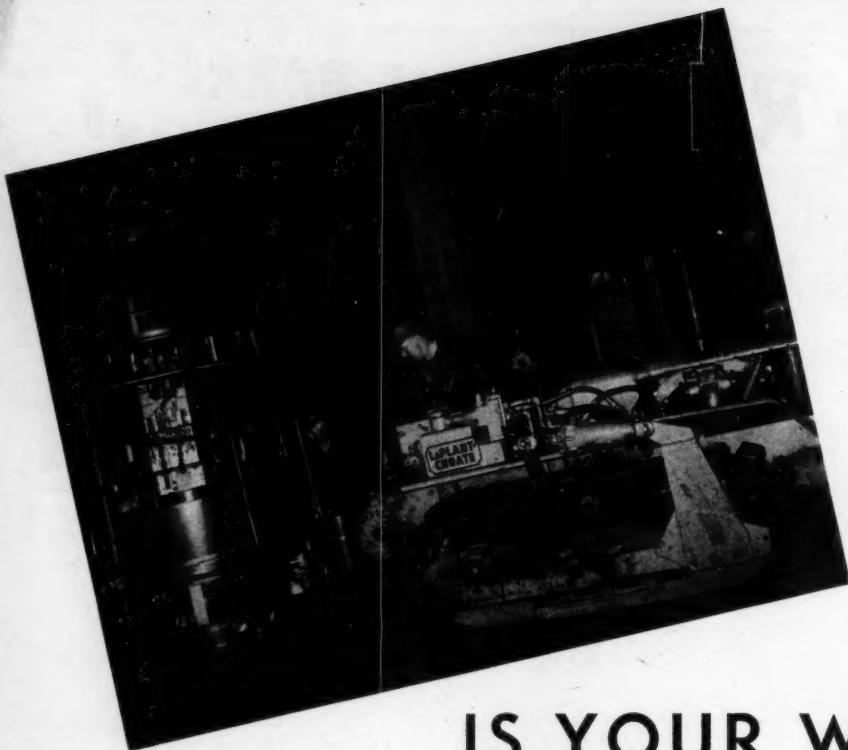
The Yale & Towne Manufacturing Company  
4530 Tacony Street Philadelphia 24, Pa.



**MATERIAL HANDLING MACHINERY**  
CUTS PRODUCTION COSTS... SAVES TIME... SAVES EFFORT... PROMOTES SAFETY



HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC • KRON INDUSTRIAL SCALES



Wire rope helps do a hauling job. This tractor is moving a large press from one department to another.

## IS YOUR WIRE ROPE LARGE ENOUGH?

**M**R. E. STYRIS, purchasing agent for the Isbell Construction Company, Reno, Nevada, says that "It is my belief that many manufacturers of heavy equipment of all types are not making sheave and drum grooves large enough. Certainly our experience is proving this."

### Proves His Point

He clinched his statement by citing an example of two power shovels, both  $2\frac{1}{2}$ -yard capacity, both working side by side, doing the same type of work, handling the same type of material, both operated by skilled shovel runners. The only difference between the two outfits was that Shovel A was equipped with 1-inch diameter rope, while the sheave grooves on Shovel B had been re-grooved and equipped with  $1\frac{1}{8}$ -inch rope. The two ropes were identical in construction: 6x19, preformed regular lay, improved plow steel.

The service records of one run

showed that the  $1\frac{1}{8}$ -inch rope which had been installed on Shovel B moved a total of 257,967 tons of material, while the 1-inch rope on Shovel A turned in a volume of only 112,184 tons. Same job, same conditions.

Mr. Styris may have a point here. At any rate his management is currently re-grooving the sheaves and drums on all their equipment (as it becomes necessary) to accommodate a slightly larger wire rope, expecting thereby to double



the service of their wire ropes at a very slight increase in rope cost.

Whether or not such a policy could be applied to all cable-operated equipment seems debatable. It is probable that machine designers are building sheaves and drums to diameters suitable to ordinary wire rope. They may be failing to take into consideration the flexibility of preformed wire rope and its ability to much better withstand bending fatigue—thus making it possible to use, with preformed rope, a smaller diameter drum or sheave.

The current table for calculating minimum sheave and drum diameters is shown in the table.

above table literally, the sheave diameter for the 1-inch rope should be 30" while the one for the 1½-inch rope should be 34" in diameter. Yet here was a 1½-inch rope giving twice the service of a 1-inch rope on a sheave designed for the latter. And all because it had been made more easy to bend by being preformed.

It is only reasonable to believe that when endowed with flexibility a larger diameter and stronger rope will far outlast a smaller rope. Since at the present time over half of all the wire rope made and used in the United States is preformed what really needs to be done is for the wire rope industry to formu-

Table: Calculating Minimum Sheave and Drum Diameters

For 6x7 Construction .....	42 times diameter of rope
For 6x19 Seale Construction.....	34 times diameter of rope
For 6x16 Filler Wire Construction....	30 times diameter of rope
For 6x19 Warrington Construction....	30 times diameter of rope
For Flattened Strand .....	30 times diameter of rope
For 8x19 Seale Construction .....	26 times diameter of rope
For 6x19 Filler Wire .....	26 times diameter of rope
For 6x22 Filler Wire .....	23 times diameter of rope
For 8x19 Warrington .....	21 times diameter of rope
For 8x19 Filler Wire .....	21 times diameter of rope
For 6x37 Seale .....	18 times diameter of rope
For 6x41 .....	18 times diameter of rope

This was originally scaled for ordinary, non-preformed wire rope and has been used for uncounted years. Actually it is obsolete so far as preformed is concerned as proved by Mr. Styris' recent comparison. In his case the two ropes were, respectively, 1-inch and 1½-inch diameter. Since the rope construction was 6x19 that meant, if the machine designer were to follow the

late a new table for sheave and drum diameters based on preformed's greater flexibility. In the meantime, it might be worthwhile for many operators to consider regrooving their present equipment to accommodate a larger and stronger rope. Before actually doing so, however, it would be the better part of wisdom to consult a wire rope engineer.

## "DELIVERING THE GOODS"

By C. J. CARNEY, JR.

Chairman, General Mdse. Committee  
Packaging Clinic Program  
Industrial Packaging Exposition

The biggest development in packaging today is the fact that the Nation's top merchandisers, the boys who try to keep their fingers on the Nation's cumulative consumer pulse, are re-awakening to the importance of Protective Packaging. It means that while each one of us has for a number of years given serious thought and effort to the development and improvement of packaging methods, each one of us has maintained a staff of packaging consultants to aid and assist

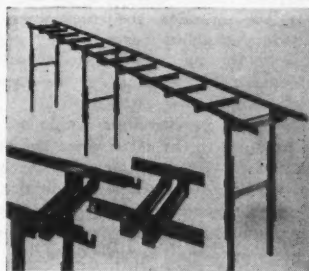
our merchandising organizations to do a better job of "delivering the goods."

In the scheme of national merchandising, there are problems of materials assembly, warehousing, transportation and distribution in units, numerically related to practical inventory considerations and adequately protected, and attractively presented in a way that will show consideration of the basic elements of product purchase, distribution and sale.

The coming of age of the practical science of Protective Packaging is the newest and biggest thing in business today for reasons vital to the welfare of merchandiser and manufacturer alike. It means money in the bank for the merchandiser because sound packaging leads to economies of warehousing and distribution, and customer acceptance. Good

## ROLLER CONVEYORS

### Prompt Delivery!



- \* Exceptionally strong
- \* Unusually light-weight
- \* In sections or complete units
- \* Furnished in sizes to meet your needs

Logs rapidly adjustable.  
Ideal for conveying tools, finished products, products for assembly, packaged goods, etc., throughout the factory.  
Also Available:  
Hand trucks, industrial shelving, storage bins and racks.

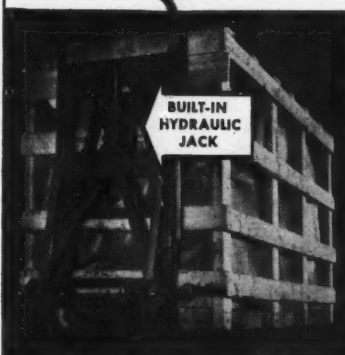
## WAYNE PRODUCTS

333 NORTH MICHIGAN  
CHICAGO 1, ILLINOIS

FRANKLIN 7100

## MONTOUR

### ROL-A-LIFT



MOVES CRATES TOO BULKY FOR FORK TRUCKS, INTO PLACES CRANES CAN'T GO

Puts any crate, box or awkward manufactured unit on wheels—quickly! Does the work of four men. Available in two sizes . . . 4000 and 6000 pound. Each Rol-A-Lift is a set of two units, one for each end of crate. To use, insert stub forks and lift with built-in hydraulic jack. Full swiveling casters for work in close quarters. Lowers load at controlled speed. Hundreds in use by railroads, factories, warehouses.

Write for folder

**SKARNES**  
ENGINEERING & SUPPLY CO.

2428 Riverside Ave. • Minneapolis, Minn.



packaging means fewer loss and damage claims through safer product delivery. Fewer loss and damage claims means better customer good will, and good will means more sales. Loss and damage reduction means something to the carriers, the railroads, the truck lines, for if good packaging means money in the bank for the merchandiser, it means less money out of the bank for the carriers in claim payments.

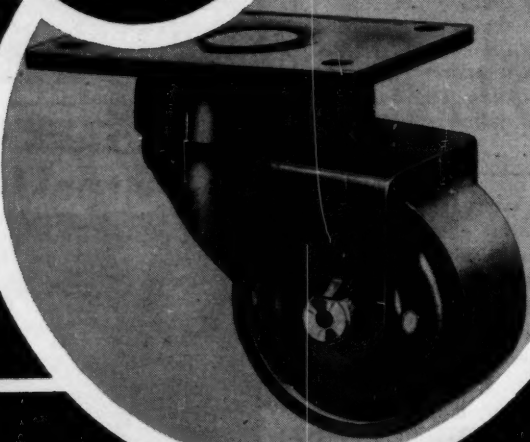
No good merchandiser wants to sell his products to the carriers via the damage claim. We want our sales to count and you know as well as we do that in this highly competitive field of ours, that merchandise undelivered to a customer means unrecovered expense to us.

Scientific product protection means happier customers, customers who will come back because they know where they can go to buy good merchandise that won't have to be returned or adjusted because the package failed to deliver the goods. A most important element of profitable merchandising is profitable packaging, not from the standpoint of how little protection for the cheapest expense, but rather what packaging is required to meet the conditions of modern merchandising logistics.

## THE ACTIVITIES OF THE BOX MANUFACTURERS

By Mr. Walter Goettsch

A  
SAVING  
AT EVERY  
TURN



## DARNELL CASTERS

- Wearing parts carbonized and hardened
- Patented Double Ball-Bearing Swivel
- Maximum floor protection means savings
- Will increase efficiency of employees
- Made in any size for any type of use

DARNELL CORP. LTD. 60 WALKER ST., NEW YORK 13, N.Y.  
LONG BEACH 4, CALIFORNIA 36 N. CLINTON, CHICAGO 6, ILL.

The container manufacturers have given ample proof of their ability to produce containers to meet any higher standards that may be required. As a group they are definitely quality minded. Quality has been an important factor contributing to the rapid and substantial growth of the industry.

Considering the conditions under which it had to operate during the war years, the container industry turned in an outstanding performance. For the armed services it produced better containers than have ever been made before, for the civilian needs it took such material as was left and did a remarkable job stretching it to cover at least the most essential of our civilian needs. That these containers were far below pre-war quality standards nobody will deny. It is amazing that these containers did as good a job as they did. True, the damage figures are very high, but let us not forget that shipping hazards were greater. Furthermore many shippers were not packing and sealing boxes properly. In many cases boxes of incorrect size were used, inner packing was reduced, both as to quality and to quantity, sometimes omitted entirely, and second-hand boxes were used to a greater extent than ever before.

There is much to be said in defense of the wartime civilian container. In the light of the conditions it had to face, the improper practices to which it was subjected, it did a pretty good job. The important fact, however, is that it is not good enough. If damage claims are to come down, if goods are to arrive at their destination safely, and in good condition, we must have better containers. The container manufacturers, as a group, are fully aware of this. With their men returning from service they are rapidly reestablishing manufacturing standards, that could not be maintained with wartime help. Equipment is being overhauled. Much new equipment has been bought, some of it is beginning to be delivered and installed. In a relatively short period of time the equipment, the methods, and the standards of manufacture in the container plants proper are going to be on a level at least as high, and in many instances higher, than pre-war.

The container industry must still face, and for at least another two or three years will continue to face, the problem which has been acute ever since 1941, that is the problem of how to stretch an insufficient supply of board to meet an urgent demand, that cannot be supplied from any other direction.

If we stretch the board supply too thin we cannot get high quality boxes. Most container manufacturers would rather make better boxes and slightly fewer of them, furthermore they would much prefer to see boxes properly designed to give maximum protection to the goods they are to carry.

I know this is a matter of great concern to the container industry, and I feel it is a problem that industrial packaging engineers can do a great deal to help solve.

# HANDLING TIME REDUCED 75%

## *With Modern Cargo Operations*

***Mechanized handling of cargo means low-cost handling—and the savings show up in profits. Here are examples of modern methods that are providing lower distribution costs.***

THE problem confronting the Allied military service and supply organizations during the war was not only the rapid distribution on a worldwide basis of an astronomical tonnage of supplies, but also the need for overcoming critical shortages of manpower and shipping facilities.

Through the development of the fork-truck-pallet system, packaged materials could be handled efficiently and in quantity without breaking the bulk package anywhere along the main arteries of supply—from factory to battlefield.

### **Cost Cutting Today**

The equipment and methods employed with such spectacular success during the war are performing an equally outstanding and efficient job in the handling of peacetime goods. They definitely point the way toward lower distribution costs.

Lift trucks, straddle trucks, and mobile cranes are among the modern handling equipment that have made possible astounding savings in cargo handling. Following are some figures released by the Navy's Material Handling Laboratory after careful studies. These showed:

(1) Sixty-eight per cent (68%) of the manhours required to unload railway freight cars can be saved by using better handling methods.

(2) Adoption of the fork-truck-

pallet system speeded the flow of materials through every handling operation.

(3) High stacking enables the best possible utilization to be made of available storage space.

(4) As a result of this system, handling time is being cut as much as 75 per cent.

(5) Every time palletized mate-

rials are handled without manually breaking bulk, additional savings of time and manpower result.

(6) Shipments formerly requiring 50 manhours to unload can be unloaded in 1½ hours.

(7) One man with a lift truck can load a car more quickly than eight to 10 manual laborers.

*(Turn to page 45)*



Miscellaneous, palletized cargo, above, loaded on special bolsters, as delivered from dock to warehouse.

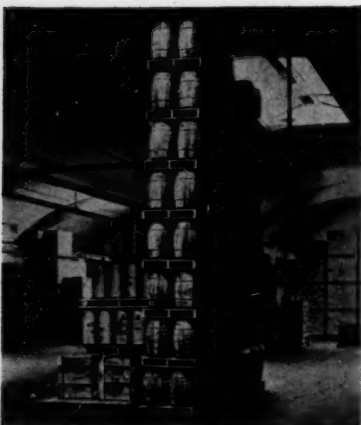
Straddle truck carrying boxed cargo, below. Pallet loads will subsequently be handled by fork lift trucks.





### **Why container manufacturers should consider modern handling methods.**

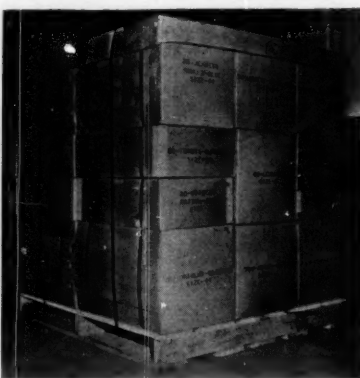
**M**ANUFACTURERS in practically all industries became conscious of the important part handling of materials played in their overall operations during World War II, due to the peak requirements of production with its accelerated movement of tremendous amounts of incoming materials and outgoing products. As a matter of fact, today we are on the threshold of an era of materials handling. It involves the use of mechanized equipment and palletization for both handling and storing within an area and, to some extent, in shipments of palletized unit loads. A gradual increase in the use of better containers resulting from recent experiences and new developments is very evident. As rapidly as the labor-management situation is rectified and re-



conversion gets further along, greater consideration to proper packaging with palletization in mind will be the order of the day. Present high labor costs, which are bound to be higher, and expansion programs with accompanying high storage volumes tend to make this

of number one importance, if reasonable profits are to be forthcoming.

Some damage is caused by carelessness, other damage by lack of experience, while some difficulties



are due to a lack of knowledge as to how the packages will be handled. It has been proven that losses due to damage and pilferage in transit can be minimized by the use of unit loads, and in many cases bracing and dunnage reduced to a minimum, in some instances effecting tremendous savings in packaging costs.

### **Modern Packaging for Modern Handling**

In the past, containers have been designed largely to withstand shipping hazards. Since the palletization movement got underway in 1936, limited at that time to a relatively few of the larger companies in certain industries, packaging designs have changed to meet the requirements of new handling and storing techniques. While the establishment of uniform containers is not always possible, the prime consideration in a standardization program involving various sizes of containers is that they can be patterned on a pallet so that an approximate uniform unit load will result. This is particularly true

where shipments might prove more economical in the near future. If the container walls carry the bulk of the load in tiering rather than the product in the container, naturally a sturdy container must be used. Photograph 1. gives some idea of common tiering heights and illustrates palletized barrels, fibre drums, carton goods, boxed goods and crated materials.

There is no question but that export packaging will be far better in the future as a result of our war experiences. Many exporters are today utilizing palletized unit loads, either steel strapped or glued, and thereby avoiding repeated rehandling and insuring safe arrival of their products. As time goes on, more and more consumers will be demanding palletized unit loads so as to avoid even the initial handling of individual bags and containers. As an indication of the progress being made in this field alone, contract export packers are in business in practically all sections of the country.

### **Containers in Relation to Pallet**

Container manufacturers are beginning to realize that the war has put a greater strain on their containers than was ever considered possible in normal times. It is recognized that conditions in the present postwar period will not be so severe; however, improvements developed are bound to find their way into present practices in varying degrees. Some time ago Fibre Board Products, Inc., San Francisco, because of numerous reports received by them of unsatisfactory results due to improper carloading, decided to compile a publication. This booklet, "How To Load Canned Goods and Dried Fruits," should be of interest because it attacks this problem in a specific manner. The Robert Gair Co., Inc. New York, also published a booklet, entitled "The Palletized Load." It very simply presents the basic fundamentals that should be given consideration when attacking a line of products that normally are shipped in corrugated or fibre containers.

If at all possible, it is well to design containers with an established standard size of pallet in mind. Some products can be stacked on pallets with an over-



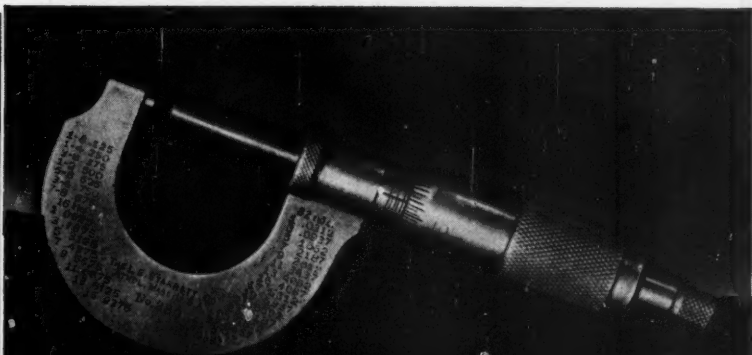
hang of even 1" to 2", while for others, particularly where shipment is planned to be made in palletized unit loads, a similar overhang is highly desirable in order to eliminate end shift of the load in transit.

Photograph 2. illustrates an ideal unit load of cartons of different standard sizes designed to provide a standard 4-cubic ft. unit load.

In the use of smaller metal containers, it is always well to utilize nesting containers if at all possible, as a simplified and less costly unit load will result.

Here are some suggested rules to follow for each basic type of container in order to avoid unnecessary limitations in their handling and storage.

1. Use bags of sufficient strength never loaded over 100 lbs. and preferably limited to 50 lbs. Bags should be well filled and sealed so that they make even stacking possible.
2. Baskets, such as fruit baskets, should not have handles projecting above the basket cover, preventing stacking and satisfactory distribution of loads when stacked on pallets and tiered.
3. Use nesting cans whenever they are available to serve as the exterior container in transit, if at all possible.
4. Larger and heavier drums should have corrugations on the bilge, or be provided with beads so that the drums may be placed on pallets or lifted by means of a fork truck.
5. Walls of corrugated and fibre cartons should be sufficiently strong for stacking on pallets and tiering if they must carry the entire load. Inserts should be provided, if possible, to share the load. Fibre drums usually prove more satisfactory for small quantities of bulk materials.
6. Wooden boxes should have flat tops and bottoms if possible. End cleats to facilitate handling and add strength and diagonals to provide additional strength where necessary. The latter point particularly applies to crates. If possible, boxes and crates weighing over 150 lbs. should be provided with runners to permit entry of forks or slings.
7. Bales should be well secured and provided with at least two opposite flat parallel sides.



## CLARK A precision instrument, too!

**PROPER MATERIAL HANDLING**  
is a precision problem that assumes a new importance as production costs rise. Executives now convert unskilled labor to more profitable work by use of CLARK industrial haulage vehicles to carry, lift and tier materials.

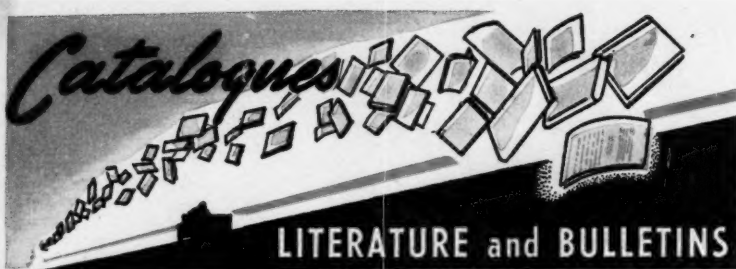
Handling costs reach new "lows" as CLARK fork trucks and tractors move loads between docks, warehouses and production lines.

Let a CLARK engineer help you work out a plan to speed movement and reduce costs—no obligation.



**CLARK**  
FORK TRUCKS • LIFT  
DUMP TRACTORS • TOWING  
Gas and Battery Powered  
**CLARK TRUCTRATOR**  
DIVISION OF CLARK EQUIPMENT COMPANY  
BATTLE CREEK, MICHIGAN  
OTHER PLANTS: BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN

**Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS  
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS  
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS  
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS**



The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

**199—Tractors, Trailers, Lift Trucks** . . . a "vest pocket" size catalogue by The Mercury Mfg. Co. illustrates the concern's complete line. Accessories such as coupling and caster assemblies for trailers are shown among others. In the lift truck and fork truck sections specifications cover turning radius, overall length and width, and speeds for operating hoists and forward travel. Both electrically and gas propelled vehicles are featured.

**200—Bucket Elevator** . . . Link-Belt Company presents a folder on an internally loaded loop-type bucket elevator for handling small parts. Ways of installing the device to load from several different angles are shown together with suggested uses in the manufacture of small parts. Typical illustrations are cutaway views showing the internal parts of the conveyor.

**201—Spring Belt Conveyor** . . . a bulletin by E. C. Horne Machinery Co., on a portable, reversible, power-driven conveyor, which is designed to operate around curves and turns. The illustrations of the device are of several actual installations of bag conveying. Other items which can be conveyed are paper sacks; cartons; boxes; flour, cement, or sugar sacks; tote boxes, and bales.

**202—Lift-Truck Battery Generator** . . . a fully automatic lift-truck battery generator is described by the Hertner Electric Co., in a four-page

bulletin. Detail drawings give the space requirements necessary, also show the cabinet with the front removed. Description of the component operating parts are plainly labeled.

**203—Automatic Material Racks** . . . a presentation of American Machine & Foundry Co., on its spring-powered material racks. Included are photos of actual operating conditions. Details of operation are fully explained with various applications of the racks in different types of manufacture. Automatic raising and lowering features are also described.

**204—Power Belt Conveyor** . . . a pictorial story by the Rapids-Standard Company, Inc., on its Floor-Veyor. Photographs show how various materials are handled between floors. Drawings indicate how this conveyor can be linked with wheel-type gravity conveyor into a complete material handling system.

**205—Battery Charger** . . . an illustrated presentation by the Electric Products Co., on its automatic motor-generator battery charging equipment for motorized lift trucks. A large picture of the inside of the unit is shown, and the parts are described in detail.

**206—Mesh Belts** . . . a descriptive bulletin on the use of mesh belts published by the Cambridge Wire Cloth Co. The many applications listed include bakeries, canneries, metal finish-

ing, glass making, copper brazing, silver soldering, carburizing, tempering, and other industrial uses. Different available weaves are illustrated.

**207—Wheel Conveyor** . . . Pohlman and Lorenzer, Inc., presents a four-page folder on the use of its ball bearing wheel conveyor. Many different users are listed. These include beverage bottlers, beer distributors, food manufacturing plants, railroads, wholesale grocers, and others. Regular section sizes are given also a listing of the various models available.

**208—Crane and Foundry Data** . . . Whiting Corporation offers four bulletins, which are entitled as follows: "Useful Information for Foundrymen," "How to Get Uniformity in Hot Metal," "Presenting the Pour-Rite Ladle" and "Crane Maintenance Cost Record." These bulletins are designed to furnish new handling and operating data to foundrymen and those connected with foundries.

**209—Fork Lift-Truck Operation** . . . five new brochures by Automatic Transportation Co. answer technical questions on operation and construction of its two, three, four, five, and six thousand pounds capacity fork lift-trucks. In addition, the folders include line drawings showing specifications, turning radii, lifting heights, etc. Technical data give a summary of the operation and construction of motors, controllers, switches, battery accommodations, frame, brakes, axles and drive, elevating, tilt and steering units.

**210—Metal Conveyor Belt** . . . a 24-page catalogue by Cyclone Fence Division of U. S. Steel showing the application in various types of industries for their chain link conveyor belts. One photo shows a method of weaving two sections together to form an endless belt. Weaves in steel, aluminum, brass, bronze, nickel, copper, monel metal, nickel-chrome, magnetic and non-magnetic metal are illustrated. Lagging of pulleys and take-up methods are shown along with the use of snubber rolls in the driving mechanism. Fractional gauges, decimal equivalents, and split gauges in decimal sizes are included.

**186—Storage Racks** . . . an illustrated folder published by Economy Engineering Company, showing various uses of steel racks for storing oil in drums and barrels. Other applications shown include carboys, tote boxes, large spools of yarn, steel bars, etc. All steel, arc welded barrel stands are also described.

**187—Vibration Control** . . . an 8-page bulletin entitled "Vibro-Levelers," issued by Bushings, Inc., which gives information on a complete line of machinery mountings designed to stop transmission of vibration as well as provide a means of levelling the machines. Illustrated examples cover small and large machines.

# OPPORTUNITIES

*Men wanted      Jobs wanted      Lines available*

## HELP WANTED

**SALESMEN WANTED — SELL GRAVITY CONVEYORS, PRE-FABRICATED CONVEYORS & BOOSTERS. LIBERAL COMMISSIONS. TERRITORIES OPEN IN NEW YORK CITY, NEW JERSEY, N. Y. STATE, MASS. MATERIALS AVAILABLE. WRITE GIVING FULL PARTICULARS. BOX: 8146, FLOW.**

## LINES WANTED

**Manufacturers' Representative  
New York City Area  
Seeks Sales Agency for a  
Fork Lift Truck  
Gas Driven  
Have Large Sales Organization, Warehousing Facilities and Maintenance Department. Box 7146, FLOW.**

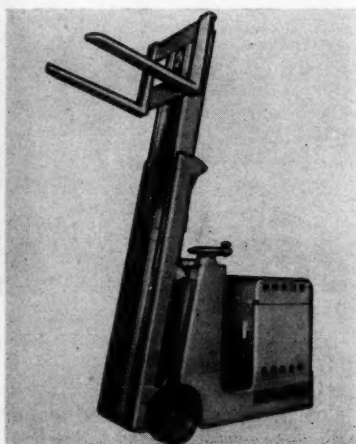


For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

### ELECTRIC FORK TRUCK

A RECENTLY perfected electric fork truck is announced by Lewis-Shepard Products, Inc. According to the release, the machine has a short turning radius and an

extremely low center of gravity. Using a 48-inch fork and carrying a 48-inch load, the truck can enter a 12-foot wide aisle and, with one continuous forward travel of the truck, make a single right angle turn and right angle stack, with no backing, claims the manufacturer. The capacity of this truck is 4000 pounds.



### BALL BUSHING

PRODUCTION of a round shaft-type ball bushing by Thomson Industries, Inc., is claimed to give anti-friction linear motion which prevents cocking and binding often present in plain linear bearings. Operating economies due to reduced load, less servicing, and higher operating speeds with sustained precision are also claimed in the manu-

### AUTOMATIC MATERIAL RACK

THE Lowerator Division of American Machine & Foundry Co. is now producing an automatic material rack. Mounted on four casters, the racks can be positioned on either side of the operator and removed when not in use, it is



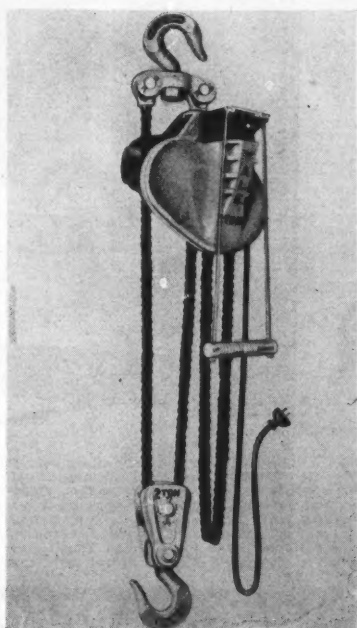
stated. A calibrated spring mechanism, according to the news release, maintains the racks constantly at convenient working level.

As the trays on one rack are emptied, they automatically rise to working level. As the trays on the opposite side receive the finished parts from processing, they automatically depress into the rack.

### ELECTRIC HOIST

AN addition to its Midget King series of electric hoists is the new Yale and Towne Co.'s 2-ton model. Equipped with a 1 H.P. motor, the hoist can be used either

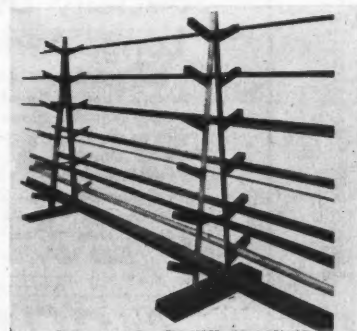
in a stationary arrangement with a hook attachment, or it can be operated on a monorail with a permanently attached trolley, according to the company. Lifting and lowering action is obtained by use of the one-hand bar-grip control,



leaving the other hand free to guide the load. The shaft and all gears are alloy steel, forged and hardened, with precision bearings used throughout, according to the release.

### STEEL RACKS

AN ALL steel welded-construction rack is being manufactured by Massey Machine Co.,



Watertown, N. Y. The flanges on the arms provide a convenient place for size marking, and the angularity of the arms provides safety, states the manufacturer. Available sizes provide 4, 6, 8, and





NO PENTHOUSE  
NO HEAVY WALLS  
NO MACHINE ROOM

**MOST PRACTICAL  
ELEVATOR FOR  
2, 3 OR 4  
STORIES**

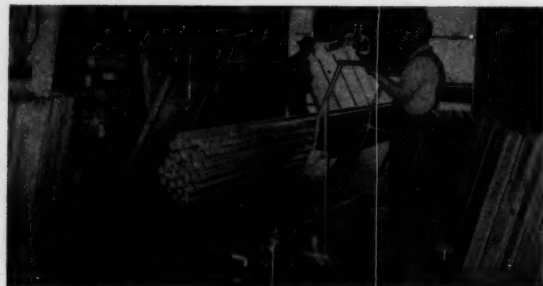
**O**ILDRAULIC Elevators are designed for dependable operation at lowest cost. No penthouse or heavy load-bearing shaft-way structure required . . . powerful hydraulic jack pushes load up from below. Extremely smooth and accurate landing stops. Power used during rise only—economical. Compact electric power unit. Car

sizes and capacities as required. All popular controls. Practical for rise up to 40 feet. For freight or passenger service. Write for Catalog RE-301.

**ROTARY LIFT COMPANY**  
1171 Kansas, Memphis (2), Tenn.



## Rotary OILDRAULIC ELEVATORS



Handling Pipe and Flat Crates in a Metal Warehouse.

## Specially Designed to Handle Long, Awkward Flat Loads

The ROL-AWAY enables one man to move long, flat material and pipe—with ease and safety—doing jobs ordinarily requiring three or four men. Ideal for flat metal plates, plywood, plate glass, pipe, tubing and large flat crated material. No lifting required to load or unload. Saves floor space—rolls in any direction—much faster than any other method. Capacity 2400 lbs.—weight only 64 pounds. Rol-away will save its low cost in a few days time. Get the facts on this time and labor saving truck. NOW.

Send for Free Illustrated Folder TODAY!



Dealer Franchises Available

**Beal Pipe and Tank Corp.**

2101 South West Jefferson Ave., Portland 1, Ore.

12 arms per unit in heights of 4'-6" and 6'-0". Carrying capacity varies from 2,000 pounds to 6,000 pounds.

## LIFTING GRAB

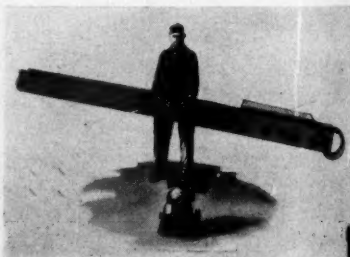
A "CLOSE-CLEARANCE" grab for handling boxes and crates up to 1000-pound capacity is being offered by The American Mono-Rail Company, Cleveland. According to the release, the grab can handle boxes as long as 20 feet.



Operated from a single hoist hook, the gripper jaws are pulled together, parallel to the load by the plow-steel cable threaded around the sheaves. The narrow jaws permit close spotting of unwieldy boxes with little lost motion, it is claimed. The horizontal spread of the jaws ranges from a six-inch minimum width to a 17-inch maximum width.

## PORTABLE CONVEYOR

A NEW lightweight portable conveyor is announced by Mate-



rial Movement Industries (formerly Coaltoter Conveyor Co. Not

**FLOW**

Inc.), Chicago. According to the manufacturer, the Tote-All Zephyr weighs 135 pounds in the 12-foot model (without motor). Two models are available at present; a 12-foot and a 16-foot, both with 8-inch belts. Power is furnished by a gasoline engine mounted above the conveyor.

Such bulk items as sand, salt, coal, gravel, fertilizer, etc., can be conveyed, and the Tote-All Zephyr can be readily moved from one job to another, according to the manufacturer's news release.

### COMMUTATOR HEAD

**T**HE Automatic Transportation Company introduces a commutator head made of micalex, a noncombustible compound of mica powder and glass, for brush holder mountings in the motors of its plat-

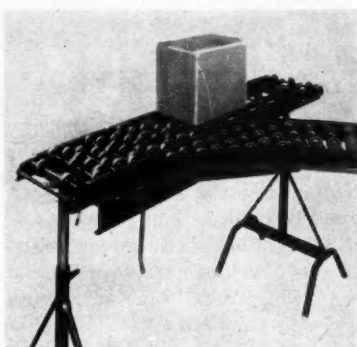


form and fork lift trucks. Engineers predict the mountings will last indefinitely, according to the company. The news release states that this design permits replacement or inspection of motor leads, brush holders, brush springs and mountings without dismantling the motor.

### WHEEL CONVEYOR SPUR CURVE

**O**PERATED by a manually controlled lever, the new Rapids-Standard wheel-conveyor "spur curve" is designed to route different commodities to their designated storage areas, according to a release by the manufacturer. With the switch in the "up" position, the independently mounted wheels are

projected above the level of the wheels on the curve, allowing the packages to roll on the main line. Swinging the operating lever "down" lowers the switch plate wheels below the level of the curve wheels and diverts the load around the curve to the spur line.



The spur curve is being manufactured in two standard widths, 12 inches and 18 inches, either in left hand or right hand styles. Available in a four-foot radius, the spur curve turns 90-degrees.

### TRUCK BATTERY CHARGER

**A** MOTOR-GENERATOR set for charging 6-cell lead-acid batteries in eight hours, and 10-cell batteries in seven hours is being manufactured by the Hertner Electric Company, Cleveland. Known



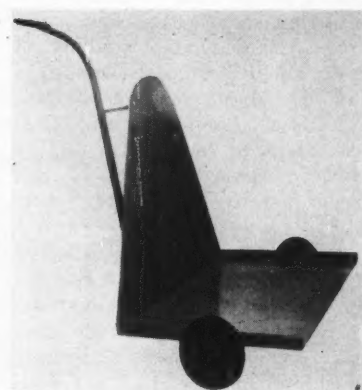
as the Model H, it will charge batteries in ranges from up to 250 ampere hours to 550 ampere hours for lead-acid types, and from up to 225

to 450 ampere hours for the nickel alkaline types.

According to the company, units can be supplied for practically any current requirement, although standard units are designed for 220/440 or 550 volt, 2 or 3 phase 60 cycles A.C.

### HAND TRUCK

**A** NEW rubber-tired hand truck is being offered by Massey Machine Company, Watertown, N. Y. Constructed of welded steel members, it can be used for moving boxes, crates, parts and materials in stores, factories, mills, bakeries and



warehouses, it is claimed. Because of its low height, the truck can be easily loaded, and the two wheels permit sharp turns in transit, according to the maker. Standard models have 12, 16, or 20-inch long bottoms, with a back of 22 inches. Carrying capacities of 300, 400, or 500 pounds can be furnished, while other special trucks can be made to order, states the release.

### PIPE COVERING

**M**YSTIC ADHESIVE PRODUCTS announces a new insulation for water pipes known as Mystic Self-stik DRI-PIPE. According to the manufacturer, the product forms a sheath-like jacket around the pipe, preventing condensation under warm, humid conditions.

Made in one size for covering one-half inch and three-quarter inch pipe, larger size pipes can be covered by splicing the adhesive edges of the material itself. DRI-PIPE is also made in larger sizes.



A study of the problem indicated that many of the jitneys and trucks were being overloaded, material was not stacked or piled properly, and accidents were happening which, fortunately, had not seriously injured anyone, although remachining was required to repair damaged items.

It was frequently difficult to determine the proper method of loading and the safe loads which could be hauled. This problem was given detailed study and resulted in the development of a loading chart which would show the proper type of transportation equipment, the proper load of material which could be easily handled, and the proper type of block or skids required to safely handle the load during transportation. Since it was obviously impossible to cover the thousands of parts which are manufactured, representative items were chosen to give a reasonable distribution of sizes and shapes without including those special items

By showing the representative item for a series of similar sizes and shapes, each item shown would furnish the correct answer to a considerable number of similar parts, particularly since the identification is given, a picture of the part is given, and the total weight indicated.

By making a general disposition of this chart to all supervisors, safety men, transportation department employes and crane hookers-on, transportation in the shop has been very much improved from the standpoint of eliminating arguments and discussions during loading and transportation of material. Where questions arise they can be quickly answered to the satisfaction of all concerned by reference to the chart posted on the side of the jitney. Safety men can verify proper loading and blocking of equipment being moved by jitney or truck through their department, and the proper type of truck can be ordered by the hooker-on for making the move required. In addition to this, repairs on transportation equipment have been reduced, hazards to other employes have been practically eliminated, and damage to finished parts seldom occurs.

AUG



## TIME REDUCED 75% . . . (Continued from page 37)

(8) When loading palletized material onto lighters with lift trucks, six men can do the work previously done by one hundred.

(9) The use of the fork-truck-pallet system for handling cargo in the holds of ships saves 50 per cent in loading time and 75 per cent in manhours.

Industrial trucks were instrumental in solving tremendous supply problems by speeding up delivery of vital materials at storage depots, embarkation and landing ports.

warehouses where protection from weather and pilferage is essential. Fork lift trucks are designed to perform these operations with speed and economy. There are sizes and models with lifts from six feet to 24 feet to the underside of the load.

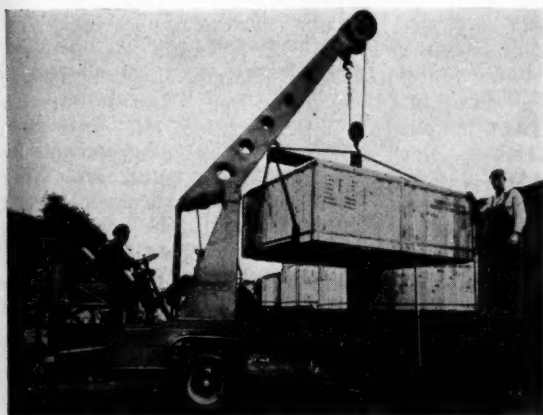
### Straddle Trucks

Straddle trucks, sometimes referred to as "carriers", were originally developed for use in the lumber industry to solve one of the most difficult material handling problems ever to confront an individual industry. And today industry is finding new uses for these hefty "straddlers."

billets, steel plates, bar stock, structural steel shapes, and similar large and heavy items. Where ingenuity is used in designing the unit package, package goods or material shipped in boxes, bales, kegs and drums can also be handled in this manner.

**Special bolsters:** Certain products often require special bolsters or cradles to suit the nature of the material, and such cradles become part of the unit package until the material is delivered to its ultimate destination.

An example is an operation in Australia where a straddle truck was used for handling heavy steel



Speeding heavy equipment boxed for export. This mobile crane is loading the units on flat cars.



Stacking heavy loads of crated tubing in outdoor storage of Brooks Lumber Co., Bellingham, Wash.

airports, landing fields, beachheads, and aboard aircraft carriers. They were used for handling all kinds of loads—crates, boxes, barrels, bales, machinery, steel, pipe, lumber, and many kinds of unit packages. Several of these operations are shown in the accompanying photographs. Operations like these are today making possible speedier cargo handling at lower cost of civilian commodities in many port areas.

One of the most desirable objectives in any material handling operation is the complete utilization of all available storage space—both vertically and horizontally. Machines are needed which will not only transport packages to a specified point on the floor or deck area, but which will also stack packages to the maximum possible height.

This is of paramount importance where there is an inelastic limit to the storage or stowage area involved with no margin for overflow, such as in the holds of ships and

Due to the large number of operations involved in finishing one stick or piece of lumber, it is desirable to eliminate manual handling wherever possible. This can be done by making a bulk package and reducing to a minimum the number of times of breaking bulk. The bulk unit package is placed on pallets or bolsters so that the package or stack of lumber can be picked up by a straddle truck and carried to the storage yards for seasoning. The pallet or bolster is allowed to remain integral with the unit load so that, after the seasoning period, the complete package can again be picked up with the straddle truck and returned to the mill for further processing. This "quantity" handling is repeated until the finished lumber is placed in the storage shed as a unit package, awaiting final delivery to the ultimate customer.

The same principle of packaging and handling without breaking bulk has been adapted by many other industries. Examples are pipe, steel

pipe, which was discharged with ship's tackle simultaneously from three separate holds alongside ship on the dock. The straddle truck transported the pipe from ship's side, making round trips to the storage area approximately 1,500 feet away.

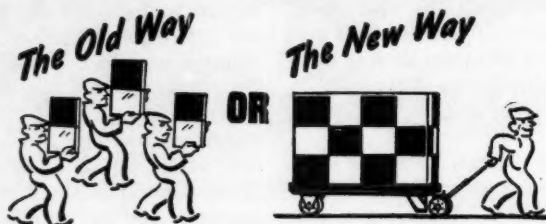
The pipe was placed with ship's tackle in cradle type bolsters, which were of the proper size to suit the throat of the straddle truck. The operations were all performed by operators who were fairly inexperienced.

Using a bolster 60 inches wide, a straddle truck of 24,000-pound capacity may with equal facility handle oil well casings of 10-3/4 inches outside diameter and weighing 39 pounds per lineal foot. A machine of this type will be able to handle approximately 24 lengths of pipe, each about 20 feet long.

### Other Cargo Handling Features

Straddle trucks have also been adapted to the delivery of miscel-

## DOES YOUR PLANT OPERATE ITS MATERIALS HANDLING DEPARTMENT



Our representative will be glad to discuss with you the possibilities of safer—faster production with special superstructures designed for handling heavy materials on production lines.

Investigate the unit cost-saving advantages of adequate skid platform, semi-live skid and floor truck facilities. Illustrated literature is available. Ask for bulletin 40, please.

IRONBOUND BOX & LUMBER CO., 30 Hoffman Place, HILLSIDE, N. J.



NOW YOU CAN  
... handle both bulk  
and packaged material  
with the same conveyor!



### QUICK FACTS

- Detachable sideboards (Conveyor can be used for bulk material with sideboards on, and for packages and boxes with sideboards removed).
- Adjustable hopper and chute for bulk material.
- Adjustable discharge roller for packages.
- 14-ft. and 20-ft lengths.
- 10-inch belt—rubber or steel cleats.
- Gasoline or electric power unit optional.
- Special drawbar and skid for trailing convey or in back of truck.

Another Tote-All first! . . . A combination bulk and package conveyor—the only “double-duty” portable power conveyor available. It’s the standard Tote-All packaged material conveyor, used for handling boxes, cartons, crates, baskets, bags, etc.—with flanged sideboards and hopper quickly bolted in position to make a heavy duty conveyor for handling sand, coal, gravel and dry bulk material up to 14 in. top size.

Get complete details on the Tote-All combination bulk and packaged material conveyor. Easily moved from job to job, it’s the only conveyor that handles both bulk and packaged material. MATERIAL MOVEMENT INDUSTRIES (Formerly Coaltoter Conveyor Co., Not Inc.) 310 S. Michigan Ave., Chicago, 4, Ill.

**material movement industries**  
... for lowest cost material handling

Ask for  
Bulletin IPOO

laneous cargo, a method employed by cartage firms. The trucks pick up various cargo at ship’s side and deliver the goods to the customer’s yard or warehouse.

Cargo is unloaded with ship’s tackle, checked against manifest and placed into wooden cases of the proper size to fit the straddle truck. These cases are made with a hinged top. After the material is placed in them, the top is padlocked and sealed. The checkers’ count is accepted for the quantity, and their list is evidence of the contents of the individual cases.

The use of these cases eliminates waiting time for the cargo handling truck, since it is not tied up either at the docks or warehouse during the loading or unloading operation. The loaded cases are allowed to accumulate at the dock until it is convenient for the straddle truck to pick up the various shipments for delivery to the consignees. When delivery is made, the complete unit package (with lock and seal unbroken) is accepted in accordance with the checkers’ receipt. There is no question of loss of contents through breakage or pilferage.

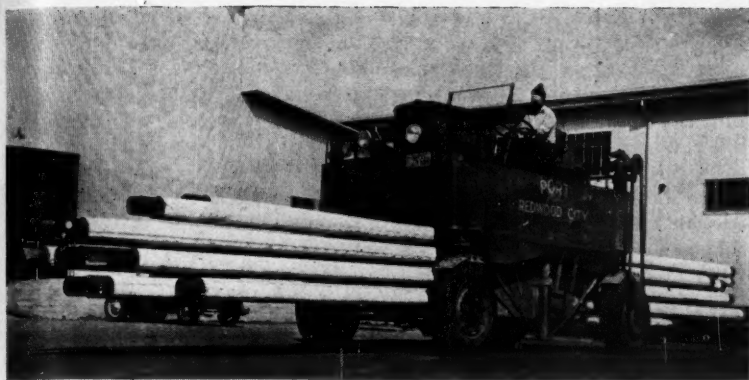
After delivery, the contents are removed at the customer’s convenience, and on subsequent trips the empty cases are picked up by the straddle truck and returned to the docks for future use.

*This application of the straddle truck is an entirely new development in material handling methods.* It gives an indication of the widening use of this equipment in low-cost cargo handling, which at the same time contributes materially to the reduction of loss from breakage and pilferage.

**Mobile cranes:** Mobile cranes are likewise proving their worth in many types of cargo handling. These self-propelled machines are particularly valuable in narrow aisles and alley ways where a stationary or overhead crane cannot be successfully used. These machines are employed particularly for loading and unloading railway cars, trucks, trailers, wagons, etc., at airports, railway terminals, docks, storage yards and other places.

### Handling Cargo for Bigger Profits

The Allied armed forces during the war have demonstrated that modern methods and equipment get



How the Port of Redwood City, Cal., handles and transports many tons of oil well casing.

the job done quicker and cheaper. As in handling operations in industrial plants, the trend in cargo handling is following a definite trend toward mechanization. This is true around the world, particularly in view of the fact that wages are on the up grade even for unskilled help. The coolie, too, is getting tired of doing things the hard way.

Progressive steamship companies today are interested in streamlining their cargo handling operations and facilities. They realize the need for greater efficiency in the various ports of call. They know that speedier cargo handling cuts down the

"in port" time and gets the steamers on their way sooner.

In practically all export territories, the handling of cargo is an important industry and offers a good field for the application of modern handling equipment. Such equipment speeds the loading and unloading of cargo and results in considerable savings on all operations. These savings will enable industry to operate at a profit in the highly competitive period we are now entering.

(Photos in this article, courtesy the Hyster Company, Portland, Oregon.)

## HOISTING PRODUCTION 25% . . .

(Continued from page 19)

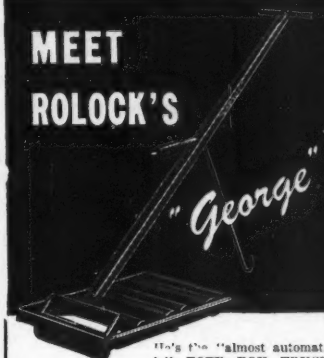
handling is proving its value. This shipping area is covered by a mono-rail system on which a one-ton hoist operates. The overhead track consists of a main line, which extends through both bays, and of five branch lines. Turntable switches, controlled from the floor, are located at each connecting point. Thus the hoist has access to every part of this area. One branch line extends over the truck pit. For loading the crated and boxed material both cable slings and tongs are used, depending on the size of the containers.

The larger finished gears leave the plant from the main receiving-shipping area in the adjoining center bay. After completion of cutting, these gears are usually picked up by crane and transported to the key seating machine located in the front part of the aisle. Next, these heavy pieces must be cleaned and then dipped before shipping. One vat for each type of fluid is

provided on one side of the weighing scale—and here another hoist enters the picture.

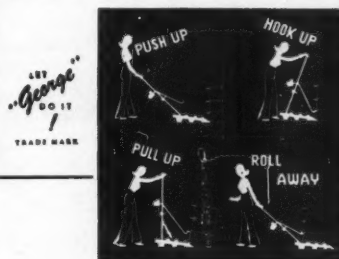
It is installed on a jib, thus making both vats accessible to it. The finished gear is lifted by means of a piece of bar stock which is inserted through the bore of the gear. The spreader bar used for this purpose is adjustable to gears of different widths. The hoist thus positions the gear to be cleaned over the cleaning vat, whose rim is approximately 18 inches above floor level. Then the gear is lowered sufficiently to immerse the teeth. And since it is suspended by use of a bar, it can be conveniently turned while the operator applies the solvent. The cleaned gear is then swung over to the dipping vat. After it has been lowered to the desired level, it is quickly slushed by turning it. (The largest gears, too heavy for the jib hoist, receive the applications by means of brushes.) After application of

## MEET ROLOCK'S



It's the "almost automatic" TOTE BOX TRUCK that simplifies movement of heavy box loads of metal parts. One user says "a great time saver . . . carries four to five times the amount handled previously . . . reduces wear of tote boxes." Two sets of ball-bearing rollers, one carries the load, other rolls truck to destination. Traction-hook slips into box handle, then "pull-back" leads load over beveled frame onto rollers. Fast, safe, energy saver. A smash hit . . . ask for Bulletin F.

ROLOCK, Incorporated, Fairfield, Conn.



## WHY ENGINEERED DESIGN PALLETES?

**T**WO-WAY . . . four-way . . . eight-way . . . reversible . . . non-reversible . . . sling type . . . hand stacker type . . . etc. A confusion of terms relating to features of different pallet designs, some of which are as impractical as their terminology.

**ENGINEERED DESIGN** will eliminate the novelty and give you a low cost practical unit ideally matched to your particular equipment and operation.

*Pallets Inc.*  
Manufacturers of  
**ENGINEERED DESIGN Pallets**

GLENS FALLS, NEW YORK  
Telephone 2-2892



weather protective material, the finished gears are hoisted by crane into outbound trucks.

You can see that material handling operations mesh smoothly at the Stahl Gear and Machine Co. The plant handles between 150 and 200 tons of gears (in and out) a month, based on a 45-hour week. This achievement is made possible by proper handling facilities that enable productive operators to concentrate their efforts on *producing*. The best proof of the efficiency of the present handling system is the fact that it has increased production 25 per cent—a worthwhile goal for any plant, small or large!



The hinged conveyor sections are adjusted to bring the loaded cases to the truck platform.

#### NO PAUSE FOR HANDLING . . . (Continued from page 23)

through stainless steel pipes from the carbonator on the floor below.

From the filler, the bottles again move onto a metal slat conveyor which carries them into the crowning machine. At the discharge end, the bottles are moved single file by conveyor into the "mixer". Here each bottle is firmly grasped by a mechanical arm and given four complete whirls to thoroughly mix the syrup and carbonated water.

The bottles next travel past the final inspection station. Each bottle is scrutinized as it passes by a piercing light, which eliminates any handling. From here, the bottles move on a long metal slat conveyor to the packing stations.

#### Touched Only Twice By Hand

This conveyor travels at an elevation of about four feet above

floor level. Empty cases coming up from the floor below on a powered roller conveyor pass the stations at a height of about 2-1/2 feet. Along this case conveyor are two long roller tables to which the empty cases are removed by packers. These tables are connected with curved sections of gravity roller conveyor which meet and form a Y. After the cases are filled with bottles (the second and final time that they are touched by hand) they are carried by gravity along the roller table to one of the curved sections. Where these sections meet, a guide in the center keeps the cases separated.

as the conveyor system approaches the stockroom aisles to route cases to the proper row. Through the area travel seven branches consisting of power and gravity roller conveyors. These receive loaded cases from the packing lines and transport them to the loading and unloading platforms in the garage. Between the conveyors, a reserve supply of loaded Coca-Cola cases is stored. The area is so divided that from any given stockpile cases can be unloaded to the conveyors for shipment in minimum time.

As previously mentioned, unloading, bottling and loading are continuous operations when possible. The methods of material handling described have enabled this modern plant to distribute over a quarter of a million bottles of Coca-Cola daily in the Cincinnati area.

#### IN YOUR AUGUST ISSUE

The flexibility of standard equipment is illustrated in numerous ways in a story on a stevedoring operation . . . Details of flow and handling methods used in the plant of a leading producer of men's clothing. See listing of other articles on page 41.

## TOWSLEY



### SPECIAL TRUCKS

engineered and produced to customers' individual requirements, are effecting appreciable savings over trucks commonly used. . . . Perhaps special trucks, designed by us for you, can cut your materials handling costs.

Why not put it up to Towsley?

**TOWSLEY TRUCKS, INC.**  
1770 Elmore St. Cincinnati 25, O.

# It's Magic!

**Problems of reconversion are rapidly being solved at the Cleveland plant of American Stove Co., makers of "Magic Chef" and the world's largest producers of gas ranges. Methods and handling are being streamlined to produce better ranges, faster.**

**By A. W. LEESEBERG**

Coordinator, American Stove Company, Cleveland

**W**ITHIN 60 days after V-J Day, the first commercial stoves started rolling off the assembly line at our plant. But we are still engaged in the tremendous job of ironing out the "bumps" in our production facilities.

Tiering can be done by hand when practical, since all of the units are small and lightweight. They range in size from only 2" x 1" (braces) to 24" x 36" (cooking tops).

Vertical storage not only saves space, but also makes it easier for the next operation when the pieces are placed vertically in a long, rectangular pickling basket. The pick-

ling baskets are made up of flat monel strips and measure 6' x 4' x 2½'. The basket can handle from 75 to 500 parts at a time, depending on the size.

The loaded baskets are moved on a flat-bed dolly from storage to the pickling room, where they are spotted under the span of an overhead electric hoist on a traveling beam. The hoist starts the loaded basket through the nine different tanks used in the pickling process. These include a cleaning bath, warm water rinse, cold water, rinse, acid bath, cold water rinse, neutralizer and drier. The tanks are conveniently located parallel to each other in their proper order. The hoist moves the loads from tank to tank, and the handle on the basket is just



Pickling basket filled with oven parts is lowered by overhead hoist into tank for cold water rinse.

A good example is our Enameling Department, where much progress has been made in modern production flow methods. Five conveyors have already been installed in the department. Two others have been purchased and will soon be placed in operation to complete our proposed program. In addition to conveyORIZED movement of materials, other improvements in handling have been made or planned.

## From Receiving to Processing

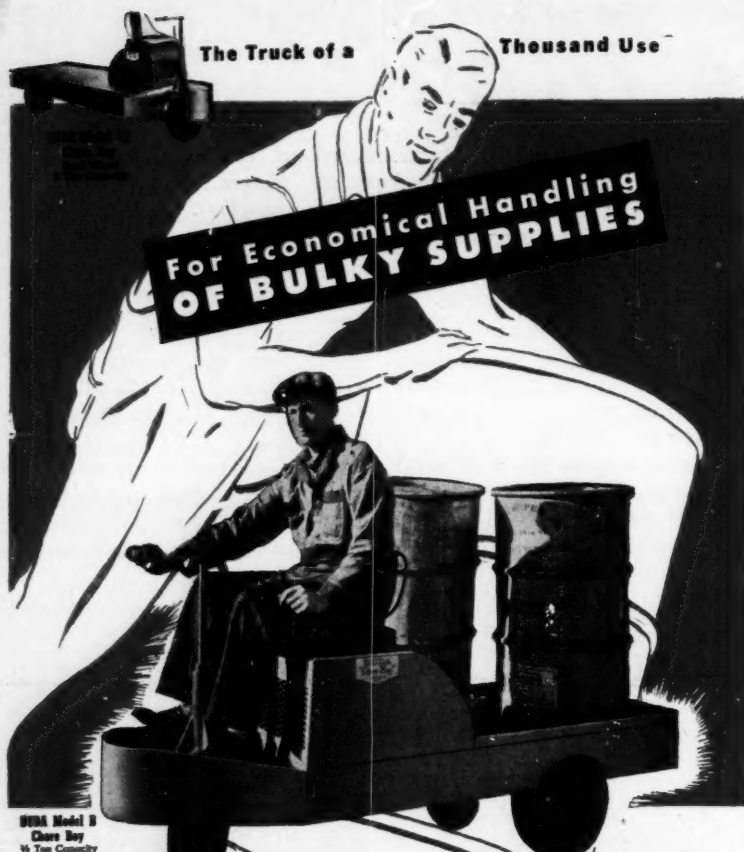
Stampings come in box-type hand trucks from the fabricating department to a receiving dock on the southwest corner of the building. An electric lift is used to bring the material from dock level down about six feet to the building floor. It is only a short move from here to the storage area where the pieces are stored according to size and the enameling process they will require.



Parts being "black-edged" hang from conveyor on triangular hangers designed for dripping purposes.

Ground coated parts are transferred from furnace conveyor to the service conveyor with shelf racks.





*the Buda Chore Boy!*

**—SAFE...FAST...ECONOMICAL**

**—runs all day on a gallon of gas**

The BUDA Chore Boy has outmoded old style methods of material control—has sped up the handling of plant supplies while actually lowering moving costs. The BUDA Chore Boy will pull, push or carry unwieldy loads up steep ramps, through swinging doors, over rough ground—quickly and for a few pennies a day... no wonder so many BUDA Chore Boys are being used throughout industry. Write or wire today for bulletins.



Chore boy with "Dump Hopper"



BUDA Model 2210 Automatic Lowering Jack



BUDA Model 25-B-10 "Two-Speed" Hydraulic Journal Jack

*"Lowest First Cost...Lowest Maintenance Cost!"*

**BUDA**



Buda Universal Diesel Nozzle Tester

15451 Commercial Ave.  
**HARVEY (Chicago Suburb) ILLINOIS**

high enough to keep the ring above the various solutions and visible to the operators.

#### Recirculating Ground Dip Tank

After leaving the drier, the loaded baskets are lowered back on the dollies and moved a short distance to the ground coat dip tank, where the pieces are dipped individually by hand. The ground coat enamel recirculates through an opening in one end of the tank and is forced by air pressure through a 40-mesh screen and a magnetic separator for the removal of foreign particles and impurities, and then back into the other end of the tank. A water-cooled tank keeps the enamel at the desired temperature.

Now the parts are ready for their first conveyORIZED movement. They are placed on hangers, specially designed for dripping purposes, that ride on an overhead trolley conveyor. These hangers are made up of two triangular parts. One, secured to the overhead trolley conveyor, is suspended at a 45° angle. The two top steel strips are about 36" long while the bottom piece measures 12". A fourth bar bisects the triangle vertically. The other three-cornered part is made up of 3/8" rolled steel. It holds the enameled part out for draining purposes and fits over three movable hooks on the larger triangle. (See photos.)

The dripping conveyor moves approximately 30 feet per minute through a 100-foot drier. After the units leave the drier, they pass through a spray booth where a coat of black edging enamel is applied.

Upon completion of this operation, the pieces are transferred to an overhead trolley furnace conveyor across the aisle. The hangers on this furnace conveyor consist of heat resisting bars and hooks. Each hanger can accommodate two to four oven sides and cooking tops, or several smaller pieces at a time. The units move on this conveyor through a gas-fired muffle furnace at a temperature of about 1580°F. for fusing or firing. The conveyor can be speeded up or slowed down if the heat of the furnace or the gauge of the pieces makes it necessary. A normal speed is from eight to ten feet per minute.



After emerging from this furnace, the line parallels a similar overhead service conveyor, to which fired parts are transferred for further movement. Here they are placed horizontally on shelf racks (see photo). These racks measure 5' x 5' x 1'. The angle iron framework contains four wooden shelves. Several pieces can be placed conveniently on each rack, and the conveyor moves along at 12 to 15 feet per minute.

#### Use of Cable Conveyor

After a short journey, these parts reach a point in our plant where white enamel is sprayed over the ground-coated parts. At this point all exterior stove parts are removed from the line; all interior parts, which by now are ready for movement to assembly lines, remain on the conveyor until they arrive at a packaging station. Here they are removed and packed for transfer to the assembly department.

Exterior parts which have been removed at the spraying station are given a visual inspection. They are then placed on a cable conveyor which passes through a spray booth, where an even coat of white enamel is sprayed over the surface. After leaving the spray booth, all parts are automatically transferred to another cable conveyor which carries them through a 50-foot gas-fired drier. The line continues past a row of girls who remove the parts, perform any necessary brushing operation, and replace them on the cable conveyor for movement to

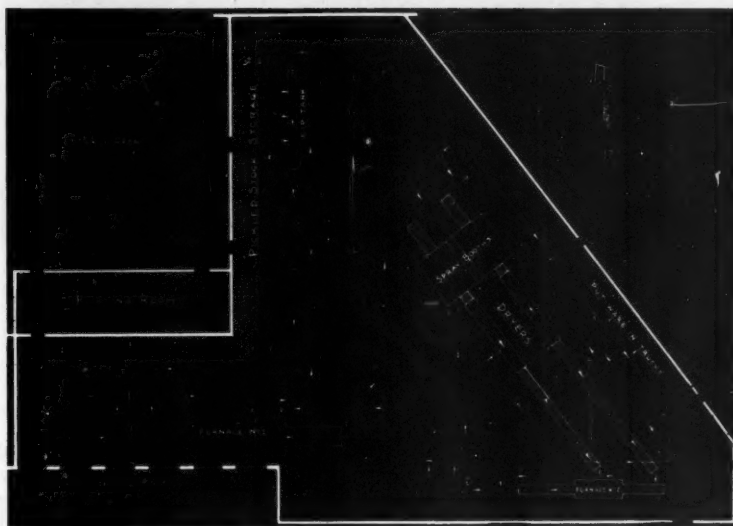


Diagram shows how oven parts travel on five different conveyors through enameling.

the furnace which fires the white enamel.

#### Overhead Storage

The pieces are then again transferred to a chain trolley conveyor which goes through the furnace for firing white enamel. The hangers on the white furnace conveyor are exactly the same as the ones that carried the material through the ground coat furnace. If parts flow too fast from the spray booth to the furnace, they are transferred to an overhead storage conveyor on which they travel until they can again be transferred to the furnace line. Likewise, if parts flow to brushers faster than they can be brushed, they are transferred to this same overhead line. This serves as a "cushion" or "bank" for

brushers and furnace.

When the parts come out of the furnace, they are atmospherically cooled and then removed to the inspection table. Rejects are set



Conveyor with heat resisting bars and hooks carries the units through final firing.

Operators remove the white enameled pieces from cable conveyor to perform brushing.



aside for further operations, and approved material is stamped and placed on the same overhead service conveyor with the shelf racks that carries the ground enameled parts to the spraying and finished goods area. It conveniently curves past the inspection table.

#### Modernization Increases Production

When the parts arrive at the end point, at the southeast corner of the building, they are removed from the line and placed in four-wheel hand trucks. Special crates are used in the case of the oven sides and cooking tops for movement to the assembly area. The

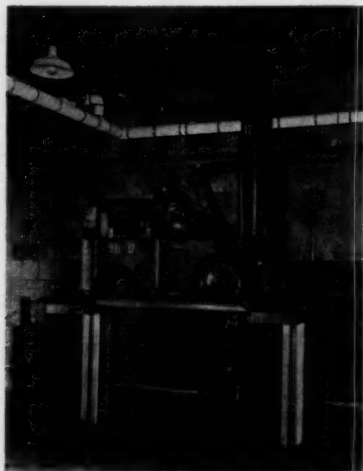
service conveyor then rises high above the floor permitting other operations to be performed underneath. It dips back to working height near the ground coat furnace, where it is brought into use again.

In addition to the lines now operating, more conveyors will be installed to carry pickling baskets from the loading station to the pickling line, and from the end of the latter to the dipping station. A belt inspection line will also be added. On it, all exterior parts will pass through an inspection chamber after being fired and before loading on the service conveyor for transfer to packing stations. These additions, plus a conveyORIZED automatic spraying unit, will complete our plans for streamlining our enameling department.

Modern methods of parts handling, plus increased production efficiency, both backed by improved methods of quality control, will enable American Stove Company to produce more and better ranges for the homes of America.

#### HERE IS ACCESSIBILITY—

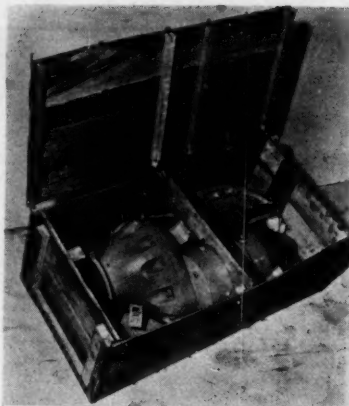
The accompanying photo shows a hydraulic lift which provides a convenient working level for the underside of industrial trucks. By means of this lift, maintenance and greasing jobs are speeded and simplified considerably.



venient working level for the underside of industrial trucks. By means of this lift, maintenance and greasing jobs are speeded and simplified considerably.

#### MAKES TRADE WINDS BLOW—

The windcharger pictured in the wirebound box above was among the machinery exhibited by the Wirebound Box Manufacturers Association at the Packaging Exposition at Atlantic City, N. J., April 2 to 5. Exported to re-



gions all over the world where electricity is not available, as well as domestically, the 122-lb. generator is entirely floated on wooden saddles between end blocks. The 12-foot propeller is also shipped in a wirebound container.—*Courtesy, Wirebound Box Manufacturers Association.*

**NEXT MONTH**—How a large railroad is coordinating scrap reclamation with efficient material handling. . . . A dental equipment manufacturer uses the right handling equipment at the right time. . . . A gasoline engine manufacturer shows how to lay out a compact production line and still have enough "elbow room." . . . A tree-form layout that produces thousands of refrigerators. . . . Metal stamping operations move smoothly by placing portable machines where they are needed . . . and other articles.

## THE MAKERS OF *Motorola* RADIOS FIND THIS NEW ALL STEEL CONVEYOR *Cuts Costs AS IT Speeds Production*

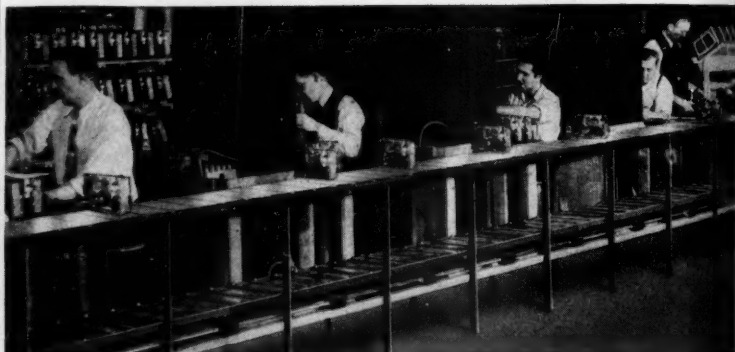
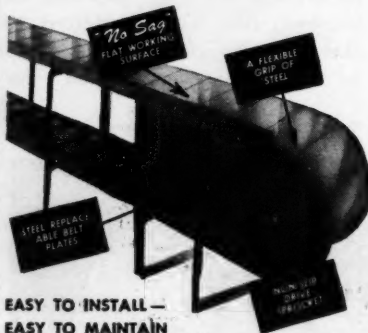


Photo Courtesy Galvin Mfg. Corp.



EASY TO INSTALL —  
EASY TO MAINTAIN

• The Galvin Mfg. Corporation originally ordered Steel Parts Conveyors for use in their cafeteria. When engineers saw how smooth running, silent and efficient this new steel belt conveyor was, they moved it onto the production lines where its no-sag flat working surface and trouble-free operation has speeded assembly and inspection. Galvin is not alone in their enthusiasm for this new all steel conveyor. The list of satisfied users reads like a Blue Book of American Industry. Find out how the new Steel Parts Conveyor can speed your materials handling job.

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For detailed descriptive booklet. Send to:  
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214 S. MORGAN STREET, CHICAGO 7

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Firm..... Address.....  
City..... State.....

## HANDLING TREET . . .

(Continued from page 21)

tor's attention for correction.

From the vacuum closing machine, the sealed cans pass through an enclosed washer, which removes any small particles of meat that may have been deposited on the outside of the metal. The cans are visually inspected for proper closing as they emerge from the washer. At the end point of the line the units are stacked manually into perforated metal retort baskets. These baskets are about four feet long, three feet high, and three feet wide, having a capacity of more than 1200 cans when loaded. The baskets, placed on runners, are in an inclined position during loading, facilitating the stacking of the cans.

At present, plans are being studied by our engineering department to mechanize the handling of the sealed cans at this point. According to these plans, the full cans would be fed from the conveyor into an area which, when filled, would be the equivalent of a layer in the retort basket. The entire layer would be automatically picked up by a magnetic plate and conveyed a short distance on an overhead rail to the retort basket, then released. In the meantime, the next layer of cans would be feeding into the pick-off area. When the area is filled, however, a gate will be activated, retaining the cans on the belt line. But as soon as the magnetic plate picks up one layer, the gate will automatically open, permitting the cans to be fed for the next layer into the pick-off area.

When the magnetic plate has dropped the last layer into the retort basket being loaded, the basket will be automatically ejected onto a roller conveyor line. Simultaneously the next empty retort basket will be moved into loading position, ready for the next layer of cans from the magnet.

Up to this point, it should be remembered, the contents of the cans are not yet cooked. This is the next step. The fork truck picks off the loaded baskets from the runners and moves them to the nearby retorts, which accommo-

## SPECIAL OR GENERAL PURPOSE USE

● Standard Euclid Cranes are available in capacities of 3, 5, 7-1/2, 10, 15, 20 and 25 tons in various spans. Over 90% of your material handling requirements can be met with standard Euclids, whether they are put to Special or General Purpose use.

Euclid Crane construction embodies high grade, wide face, coarse pitch gearing throughout with extra strength shafts and anti-friction bearings to assure longer life and lower power consumption.

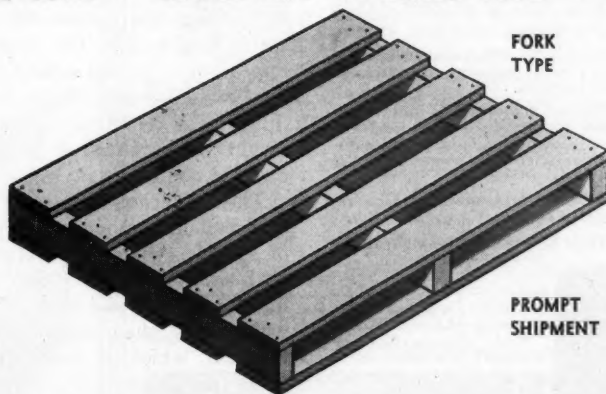
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## BATTERY-CHARGING ECONOMY for your INDUSTRIAL TRUCKS with the



### Motor-Generator Model "K-1" Charging Unit

With the Hertner Type "K-1" Motor-Generator Single Circuit Charging Unit for electric industrial truck batteries no current is wasted during the charging period since charging resistors are not used when charging.

Each Hertner K-1 Unit is specially designed for the particular battery to be charged. For lead-acid battery charging (in 8 hours), the generators are of the drooping volt-ampere type which automatically tapers the charging current as the charge progresses; for nickel-alkaline battery charging in 7 hours, the generator is of the constant-current type.

#### Fully Automatic

1. Automatic control of charge rate in accordance with Battery Manufacturer's recommendations.
2. Automatic cut-off and shut-down of motor-generator when battery is fully charged.
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Write for Bulletin 104 describing Hertner Model "K-1" Single-Battery Charger. Multiple chargers for all types of batteries are also available. For details, send us your requirements.

Control Panel

### The HERTNER Electric Co.

A General Precision Equipment Corporation Subsidiary  
Motors • Motor Generators • Generator Sets  
12756 Elmwood Avenue, Cleveland 11, Ohio  
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date two baskets at a time. At each side of the bottom of the retort a gravity roller section is installed, which permit the heavy loads to be slid into position with ease.

After the prescribed cooking period, the cans of Treet are subjected to a showering period in cold water. This completed, the loads are removed by fork truck and placed on runners (where the processing tag is removed and a sample of the product is taken for exacting test purposes). From here the loaded baskets are picked up by hand lift truck and moved by elevator to the packing conveyor station on the first floor. Here the loaded baskets are positioned near the line, and the overflow is placed in a nearby temporary storage area.

#### Delivering a Bright, Clean Can

As the cans are removed from the loads, they are placed on an inclined stainless metal tray, from which the units slide onto a wire mesh conveyor. This, in turn, carries them through an enclosed washer. Why another washing process after the cans have already been washed as they emerged from the vacuum closing machine? This question is almost invariably asked by visitors to whom the white-and-red cans look perfectly presentable. Here is why we go to this additional trouble. During retorting, or cooking, the compounds in the water tend to give the cans a dull appearance. In this additional and final washing any slight trace of dull film is removed, restoring the bright appearance of the white-and-red containers.

The clean cans emerge on a powered belt line moving in the center of a table. Operators stationed at both sides of the table pick up the individual cans and wipe them dry with cloths, then replace them on the line, which is channelled beyond this point.

The dry containers travel past an inspection point, then pass under an adhesive pot where a leaflet (printed with instructions) is attached to the top of each can. Immediately beyond this point, the single line of traveling cans enters a separation area, from which they continue in two rows. (The separators are slotted wheels.)

Up to this point the cans still travel in an upright position, but before entering the boxing unit they must be flat on their sides. This is accomplished with an offset. At the end point of a short powered belt line the cans are delivered in an off-set position on a rail, where they are briefly held upright by a guide rod. After they pass the guide rod, however, they topple over on their sides, thus arriving in the required position at the packing unit. This avoids the necessity of rehandling the clean cans. The full cases then pass over a belt line to the sealing unit, and at the end point they are placed on four-wheel flat trucks for movement to storage.

Thus, a number of different handling devices are employed in the preparation of the raw product while it is still in bulk form. And, once it is canned, equal pains are taken to protect the appearance of the exterior package—to keep it as appetizing looking as the photos of the cans appearing in full-color magazine advertisements the country travel over.

#### Food Packing Made Easy

Here is how fresh pork sausages are packed at a leading meat packing plant. The sausage trolley in the background is suspended from overhead rails. The operators in the rear re-



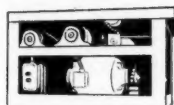
move the links and place them, in quantities of one pound each, in the round trays. These are placed on the belt line traveling down the center of the packing table. Removal of the sausage from the trays is facilitated by use of the stands with the slanting tops, which incline the product toward the individual packers. — Courtesy, Swift & Company, Chicago.



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A work bench on wheels,  
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up and down—that's the  
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**IT'S A TRUCK**  
Perfect for moving heavy  
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spot to another... saves  
lifting and carrying.



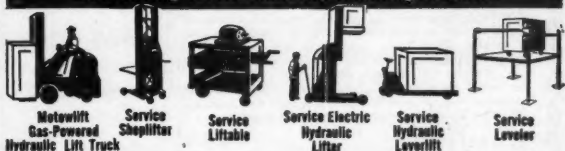
**IT'S A LIFTER**  
Transfers heavy units from  
one table height to another  
merely by cranking the top  
up or down to any height  
from 28" to 42".

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There's plenty of such work in almost  
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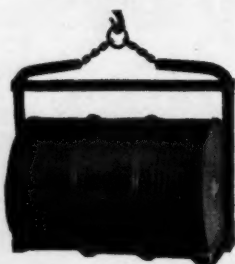
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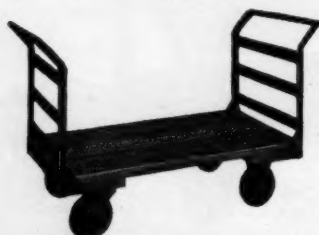
AUGUST, 1946



Item  
B-416  
\$27<sup>50</sup>

### Barrel Cradle—Toggle Type

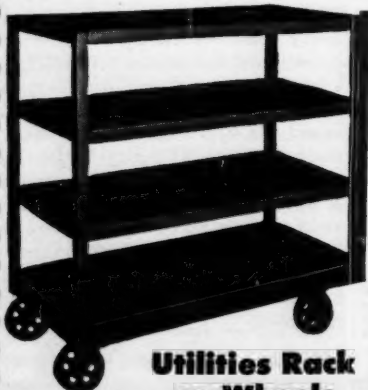
Use for picking up barrel or drum, straight or bilged sides, flat or chimed ends. Especially designed for picking up barrels and plywood or fiber drums without chimed (flush ends). Handles barrels 20" to 25" in diameter and 32" to 36" in length. Also used for handling rolls of paper, carpeting, or anything that is cylindrical in shape. Capacity 1000 lbs. Special sizes quoted on application. Heavy bar stock, welded construction. Air dry, enamel finish. Weight 45 lbs.



### Double End Truck

General purpose push truck, with hardwood platform 52" long by 22" wide. End racks are steel, with push handles 36" from floor. Four 6" x 2" metal caster wheels—two swivel, two rigid. Air dry, enamel finish.

Item X-114-M  
(Metal Wheels) \$41<sup>25</sup>  
Item X-114-R  
(Rubber Tired Wheels) \$48<sup>40</sup>



### Utilities Rack on Wheels

For handling parts or small items in course of production or assembly. Use at machine and also for conveying materials from place to place. All steel, welded construction. Width 24", height 50", length 48" overall. Clearance between shelves 12". Four 6" roller bearing casters, two of which are rigid and two swivel. Weight 220 lbs. Air dry enamel finish.

Item NS-415-M..... \$55<sup>50</sup>  
(Roller bearing, 6" x 2", all metal wheels)  
Item NS-415-R..... \$57<sup>50</sup>  
Ball bearing, 8" x 1 1/2" rubber tired wheels.

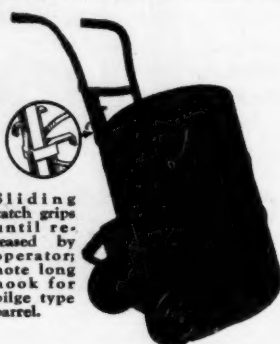
### Barrel Truck Loads Automatically

Handles with ease barrels weighing up to 1,000 lbs. Weighs but 85 lbs. To load, shove truck up against barrel or drum, then drop sliding steel catch over rim . . . pull toward you and truck loads automatically without rocking or tugging—loads from row as easily as when barrel stands alone.

Sturdily constructed of heavy steel, two 10" roller bearing wheels. Greatest width only 22", permitting it to pass through aisles and doors too narrow for many trucks.

Item S-911-M..... \$33<sup>50</sup>  
Equipped with metal wheels

Item S-911-R..... \$38<sup>50</sup>  
Equipped with molded-on rubber wheels



Sliding catch grips until released by operator; note long hook for bilge type barrel.

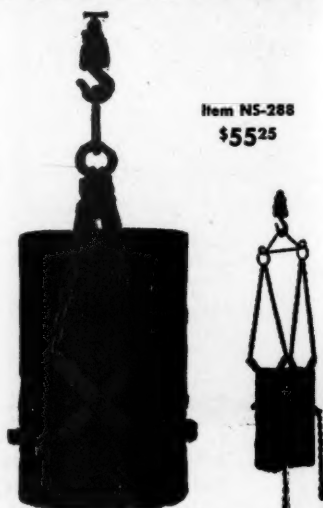


Item S-703  
\$17<sup>50</sup>

### Industrial Dust Pan

No shovel to bother with. Moves around in places too tight for a wheel-barrow. Very light to handle. Weighs only 45 lbs. Capacity one bushel. Exceptionally well constructed to withstand rough treatment in industrial plants.

The pan or metal basket which measures 18" x 18" x 18" is made of 16 gauge sheet steel, the frame of 1" x 1 1/2" x 1/2" angle iron, the handle of 1" tubing, all welded construction. The overall height is 48". Two 8" rubber tired, ball bearing wheels.



Item NS-288  
\$55<sup>25</sup>

### Barrel—Box Grab

For picking up any type of wood or steel barrel, box or container measuring from 40" diameter down to small nail keg size. Will lift up to 2000 lbs. Rigid toggle construction, with heavy welded steel chains and tongs made of heavy bar stock. Weight 35 lbs.



### Wooden Boxes Metal Bound

May be used as a push truck or with lift truck. Built of all hardwood, all welded construction, no bolts used. Four sturdy, 5" swivel casters. Metal parts are air dry enamel finish, wood left natural.

#### TWO SIZES

Item NS-418-A..... \$32<sup>45</sup>  
This item is 24" wide, 36" long, 26" high overall. Weight 185 lbs.  
Item NS-418-B..... \$36<sup>85</sup>  
This item is 28" wide, 48" long, 30" high overall. Weight 260 lbs.

We design and build all types of trucks, skids, pallets, platforms, racks, boxes, bins, and tables . . . for pick-up, loading, moving, shipping, dumping, and storage.

**When ordering:** Always use "Item" number; it will help prevent error. All weights given are approximate.

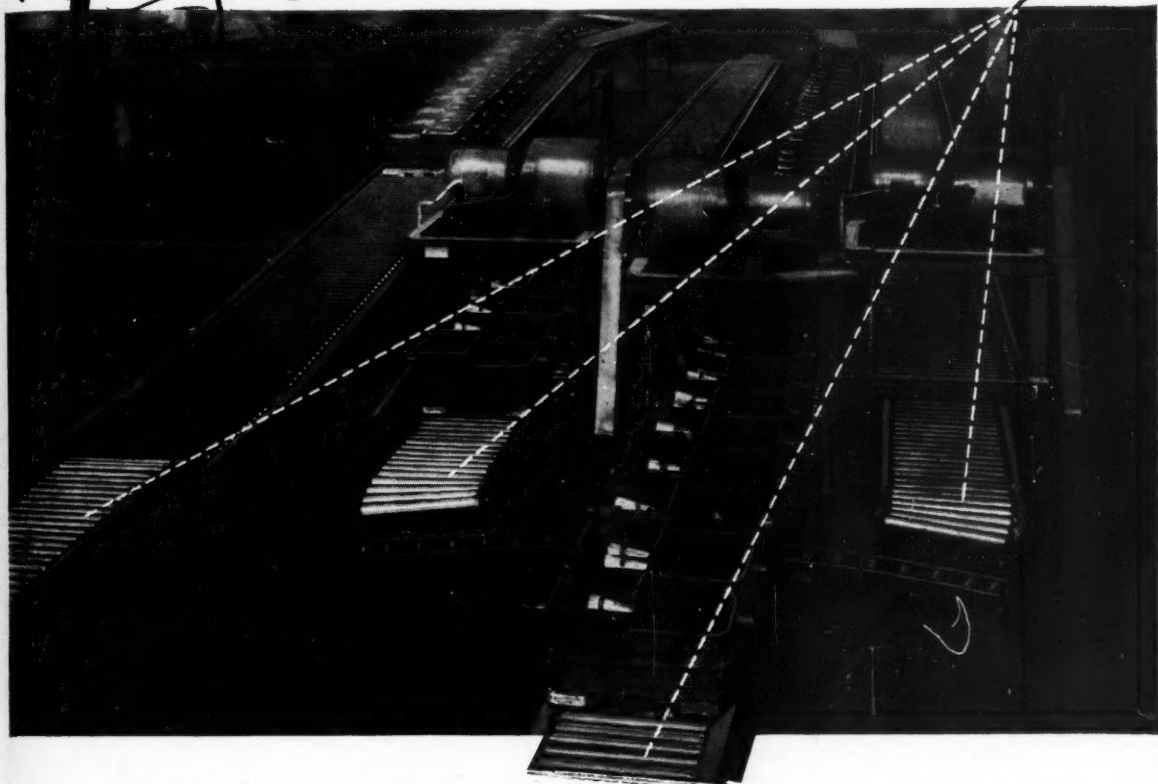
All prices f.o.b. Detroit. Prices subject to change without notice.

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## There IS a Great Difference in Roller Conveyor



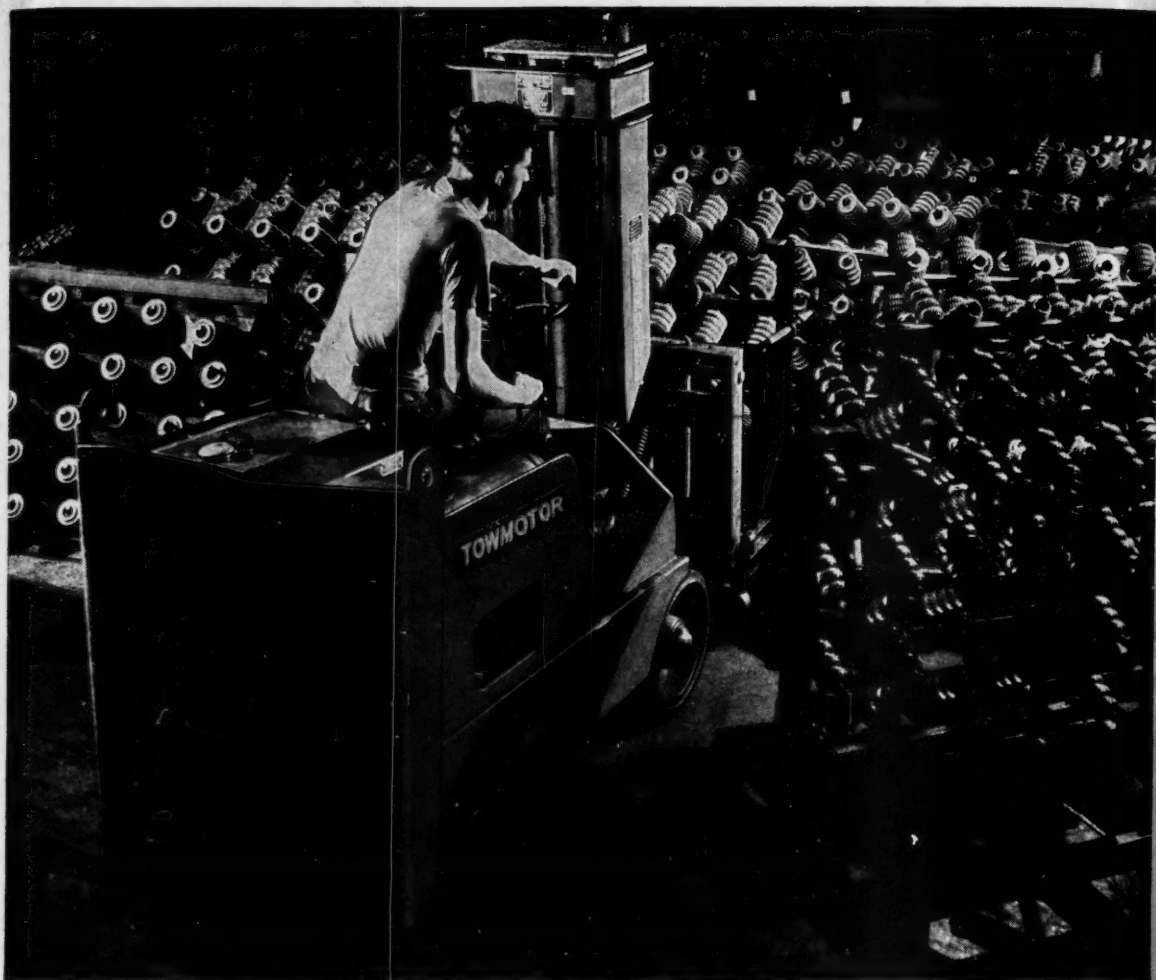
**W**HEN you buy Roller Conveyor, keep in mind the service that you should expect from it. While two sections of different manufacture may appear to be of identical design, actually there is probably a vast difference in them. The gauge and quality of tubing used — the design of the bearings and the method of their lubrication. The size and style of axles, and the method of securing them in the frames. The construction and crossbracing of the frames. The

couplings and supports. The weight and strength of the section. These are points which should be considered important. They quickly show that there is a difference in Roller Conveyor.

There is 40 years' experience behind Mathews Roller Conveyor. It is engineered to give long, efficient service, and each section is designed to meet specific customer requirements. We will gladly mail you complete data without obligation.

**Mathews  
Conveyor  
Company**

Ellwood City, Pennsylvania



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however unusual, there is an engineered solution... a solution based on Towmotor experience and "know-how" gained in solving handling problems in every industry. Send for your copy of the Towmotor Lift Truck ANALYSIS GUIDE. Towmotor Corporation, Div. 12, 1226 East 152nd Street, Cleveland 10, Ohio.

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